1965

Water Resources Data for Colorado

Part 2. Water Quality Records

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Prepared in cooperation with the State of Colorado
and with other agencies

United States Department of the Interior
Geological Survey - Water Resources Division

Water Resources Data
for
Colorado
1965

Part 2: Water Quality Records

Prepared in cooperation with

Colorado Water Conservation Board
Bureau of Reclamation, U.S. Department of the Interior
Soil Conservation Service, U.S. Department of Agriculture

Copies of this report may be obtained from
District Chief, Water Resources Division
U.S. Geological Survey
Denver Federal Center
Denver, Colorado 80225

Water resources records, 1965, for Colorado are in the following reports of the U.S. Geological Survey:

1. Water Resources Data for Colorado
   Part 1: Surface Water Records

2. Water Resources Data for Colorado
   Part 2: Water Quality Records

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[*Symbols after station name designate type of data: c, chemical; t, water temperature; s, sediment*]

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INTRODUCTION

Water-resources investigations of the U.S. Geological Survey include the collection of water quality data on the chemical and physical characteristics of surface- and ground-water supplies of the Nation. These water quality data for surface and ground waters in Colorado for the 1965 water year are presented in this report. Data for a few water quality stations in bordering States and selected data on the chemical quality of ground water in Colorado are also included. The data were collected by the Water Resources Division of the U.S. Geological Survey under the direction of T. Arnow, district chief, Salt Lake City, Utah.

Water quality information is presented for chemical quality, fluvial sediment, and water temperatures. The chemical quality includes concentrations of individual dissolved constituents and certain properties or characteristics such as hardness, sodium-adsorption-ratio, specific conductance, and pH. Fluvial sediment information is given for suspended-sediment discharges and concentrations and for particle-size distribution of suspended sediment and bed material. Water temperature data represent once-daily observations except for stations where a continuous temperature recorder furnishes information from which daily minimums and maximums are obtained.

The Geological Survey has published an annual series of water-supply papers, "Quality of Surface Waters of the United States," from 1941 through 1963 which contain the chemical quality, temperature, and fluvial sediment data of the water. Each volume covered an area whose boundaries coincided with those of certain natural drainage areas. The records for Colorado are contained in Parts 5-6, 7-8, and 9-14 of the water-supply paper series. (See table, p. 15.) These publications are available in most public libraries. Beginning with the 1964 water year, water quality records for surface and ground water obtained by the Geological Survey were published in a new series of annual releases on a state boundary basis. This report is primarily for local and immediate use, and its distribution is limited. The records pertaining to surface waters will be published in the Geological Survey water-supply papers at 5-year intervals. The first compilation will cover only the water years 1964 and 1965.

COOPERATION

Most data in this report were obtained as part of the Federal Program of the U.S. Geological Survey or in cooperation with the Bureau of Reclamation, U.S. Department of the Interior. Investigations of some ground water and surface water were made under cooperative agreement between the U.S. Geological Survey and the Colorado Water Conservation Board, F. L. Sparks, director. Investigations of fluvial sediment in Kiowa Creek basin were made in cooperation with the Soil Conservation Service, U.S. Department of Agriculture.

Six of the records published in this report were furnished by the following U.S. Geological Survey districts: New Mexico district, three stations; Utah district, two stations; and Nebraska district, one station.

DEFINITION OF TERMS AND ABBREVIATIONS

The terms and abbreviations of water-quality and hydrologic data, as used in the text and tabular data of this report, are as follows:

Acre-foot (ac-ft) is a quantity of water required to cover 1 acre to a depth of 1 foot and is equal to 43,560 cubic feet or 325,851 gallons. The term is commonly used in measuring volumes of water used or stored.

Cfs-days is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It equals 86,400 cubic feet, 1.983471 acre-feet, or 646,317 gallons.

Cubic feet per second (cfs) is a unit expressing rates of discharge. One cubic foot per second is equal to the discharge of a stream whose channel is 1 square foot in cross-sectional area and whose average velocity is 1 foot per second.

Discharge, in its simplest concept, means outflow; therefore, the use of this term is not restricted as to course or location. In this report it represents the total fluids measured in the stream.

Daily mean discharge is the mean discharge for one day.

Mean daily discharge is the arithmetic mean discharge for the same day during a specific period of years.

Mean discharge is the arithmetic mean of individual daily mean discharges during a specific period.

DEFINITION OF TERMS AND ABBREVIATIONS

Instantaneous discharge (at time of sampling). If the discharge at the time of sampling is reported instead of the daily mean, the heading of the discharge column is "Discharge (cfs)."

Drainage area is that area, in a specified location, measured in a horizontal plane, which is enclosed by a drainage divide.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Equivalents per million (epm) is a unit for expressing the concentration of chemical constituents in solution in terms of the interacting values of the electrically charged particles, or ions. One equivalent per million of a positively charged ion will react with one equivalent per million of a negatively charged ion. Parts per million is converted to equivalents per million by multiplying by the reciprocal of the combining weight of the ion. (See table below.)

Conversion factors: Parts per million to equivalents per million

Ion	Multiply by	Ion	Multiply by
Aluminum (Al^{+3})	0.11119	Hydroxide (OH^{-1})	0.05880
Arsenic (As^{+3})	.04004	Iodide (I^{-1})	.00788
Barium (Ba^{+2})	.01456	Iron (Fe^{+3})	.05372
Beryllium (Be^{+2})	.22192	Lead (Pb^{+2})	.00965
Bicarbonate (HCO_3^{-1})	.01639	Lithium (Li^{+1})	.14411
Bromide (Br^{-1})	.01251	Magnesium (Mg^{+2})	.08226
Cadmium (Cd^{+2})	.01779	Manganese (Mn^{+2})	.03640
Calcium (Ca^{+2})	.04990	Nickel (Ni^{+2})	.03406
Carbonate (CO_3^{-2})	.03333	Nitrate (NO_3^{-1})	.01613
Chloride (Cl^{-1})	.02821	Phosphate (PO_4^{-3})	.03159
Chromium (Cr^{+6})	.11539	Potassium (K^{+1})	.02557
Cobalt (Co^{+2})	.03394	Sodium (Na^{+1})	.04350
Copper (Cu^{+2})	.03148	Strontium (Sr^{+2})	.02282
Fluoride (F^{-1})	.05264	Sulfate (SO_4^{-2})	.02082
Hydrogen (H^{+1})	.99209	Zinc (Zn^{+2})	.03060

Gage height is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage", although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of gage height or discharge are obtained. When used in connection with a discharge record, the term is applied only to those gaging stations where a continuous record of discharge is obtained.

Hardness of water is the property of water attributable to the presence of alkaline earths and is expressed as equivalent calcium carbonate ($CaCO_3$). Hardness is a physical-chemical characteristic, not a substance.

Particle size is the diameter, in millimeters (mm) of suspended sediment or bed material determined by sieve and sedimentation methods.

Particle-size classification agrees closely with recommendations made by the American Geophysical Union Subcommittee on sediment terminology (Lane and others, 1947, p. 937). The classification is as follows:

Clay:	Smaller than 0.004 mm.
Silt:	Between 0.004 and 0.062 mm.
Sand:	Between 0.062 and 2.0 mm.
Gravel:	Between 2.0 and 64.0 mm.

The particle-size distributions given in this report are not necessarily representative of the particle sizes of sediment in transport in the natural stream. Most of the organic matter is removed and the sample is subjected to mechanical and chemical dispersion before analysis of the silt and clay.

Parts per million (ppm) is a unit for expressing the concentration of chemical constituents by weight, usually as grams of constituents per million grams of solution. In the laboratory the results are expressed in weights of solutes in a given volume of water. To express the results in parts per million, the data must be converted. For most waters, this conversion is made by assuming that a liter of water weighs 1 kilogram; thus milligrams per liter is equivalent to parts per million. Parts per million, for suspended sediment, is computed as 1 million times the ratio of the weight of sediment to the weight of the mixture of water and sediment.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are: Degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

DEFINITION OF TERMS AND ABBREVIATIONS

Sediment discharge is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight, or by volume, that is discharged in a given time.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks and is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current and is expressed in micromhos per centimeter at 25°C. Because the specific conductance is related to the number and specific chemical types of ions in solution, it can be used for approximating the dissolved-solids content in the water. The following general relations are applicable:

Specific conductance x (0.65 ± 0.005) = ppm dissolved solids;

$$\frac{\text{Specific conductance}}{100} = \frac{\text{total epm}}{2}$$

Sodium-adsorption-ratio (SAR) is the expression of relative activity of sodium ions in exchange reaction with soil and is an index of sodium or alkali hazard to the soil. This ratio should be known especially for water used for irrigating farmland.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff". Streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Thermograph is a thermometer that continuously and automatically records, on a chart, the water temperature of a stream. "Temperature recorder" is the term used to indicate the location of the thermograph.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the water year.

Tons per acre-foot indicates the dry weight of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in parts per million by 0.00136.

Tons per day is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour period.

Water year in Geological Survey reports dealing with surface water supply is the 12-month period, October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1965, is called the "1965 water year."

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

STATION NUMBERS AND WELL NUMBERS

A station number has been assigned as an added means of identification for each stream location where regular measurements of streamflow and determinations of water quality have been made. The numbers have been assigned in the same downstream order used in the annual series of water-supply papers. In assigning station numbers, no distinction is made between surface water gaging stations and water quality record stations. Gaps are left in the numbers to allow for new stations that may be established; hence the numbers are not consecutive.

The complete number for each station, such as 6-7540.00, includes the part number "6" and a six digit station number. In this report, the part number and only the essential digits of the station number are shown. For example, the complete number 6-7540.00 appears as 6-7540, just to the left of the station name. In this report, the records are listed in downstream order by parts. All records for a drainage basin encompassing more than one State could be arranged in downstream order by assembling pages from the various State reports by station number to include all records in the basin.

The well numbers used in this report indicate their location. The numbering system, which is illustrated on page , is based on the U.S. Bureau of Land Management's system of land subdivision. The number shows

the location of the well or test hole by quadrant, township, range, section, and position within the section. The capital letter at the beginning of the location number indicates the quadrant in which the well is located. Four quadrants are formed by the intersection of the base line and the principal meridian--A indicates the northeast quadrant, B the northwest, C the southwest, and D the southeast. The first numeral indicates the township, the second the range, and the third the section in which the well is located. Lowercase letters following the section number locate the well within the section. The first letter denotes the quarter section, the second the quarter-quarter section, the third the quarter-quarter-quarter section, and the fourth the quarter-quarter-quarter-quarter section. The letters are assigned within the section in a counterclockwise direction beginning with (a) in the northeast quarter of the section. Letters are assigned within each quarter section, quarter-quarter section, and quarter-quarter-quarter section in the same manner. Where two or more locations are within the smallest subdivision, consecutive numbers beginning with 2 are added to the letters in the order in which the wells or test holes were inventoried. For example, C4-68-15daaa2 indicates a well in the northeast quarter of the northeast quarter of the northeast quarter of the southeast quarter of sec.15, T.4 S., R.68 W., and shows that this is the second well inventoried in the quarter-quarter-quarter-quarter section. The capital letter C indicates the township is south of the base line and that the range is west of the principal meridian.

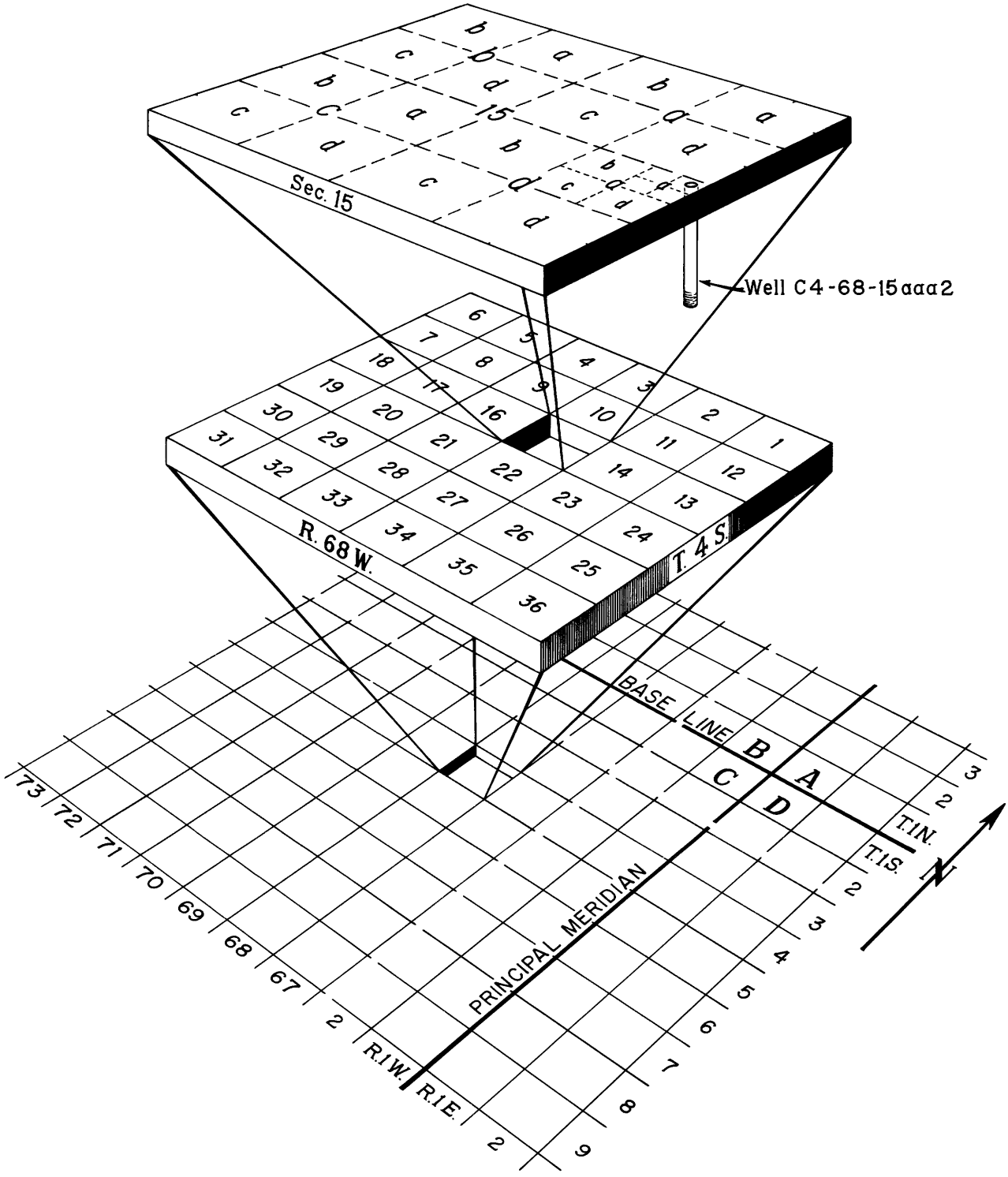

Figure 1.--System of numbering wells in Colorado.

COLLECTION AND EXAMINATION OF SAMPLES

Samples of surface water ordinarily were obtained at or near gaging stations because water-discharge data are essential for computation and interpretation of water-quality records. Samples taken daily were taken by local observers trained and supervised by personnel of the Geological Survey. Samples taken less frequently than daily generally were taken by Geological Survey personnel or by personnel of cooperating agencies. The map on page 10 shows the locations of the surface-water stations sampled in 1965.

Samples of ground water were taken at or near the points of well discharge. Data on the quality of ground water were collected at least once during the year. The areas in which these wells are located are shown on the map on page 11.

Solutes

The methods of collecting water samples and of compositing daily samples prior to laboratory analysis are described in a manual by Rainwater and Thatcher (1960). No single method of compositing of daily samples is applicable for all water-quality stations; the method used depends on the type of water problem being studied at the station. Generally, only samples having similar dissolved-solids content, indicated by measurements of conductivity, are included in any given composite. At sites where water-quality data were collected less frequently than daily, the data may represent conditions only at the time of sampling. For such sites, however, observations obtained over a period of years show relations that are useful in predicting the long-term water-quality characteristics.

Temperature

Water temperatures were measured at most of the water-quality stations. For daily stations, the water temperatures were taken at about the same time each day in order that the data would be relatively unaffected by diurnal variations in water temperature. Most large swiftly flowing streams probably have a small diurnal variation in water temperature, whereas sluggish or shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. The thermometers used for determining the water temperature were accurate to plus or minus 0.5°F.

At stations where themographs are located, the records consist of maximum and minimum temperatures for each day and the monthly averages of maximum daily and minimum daily temperatures.

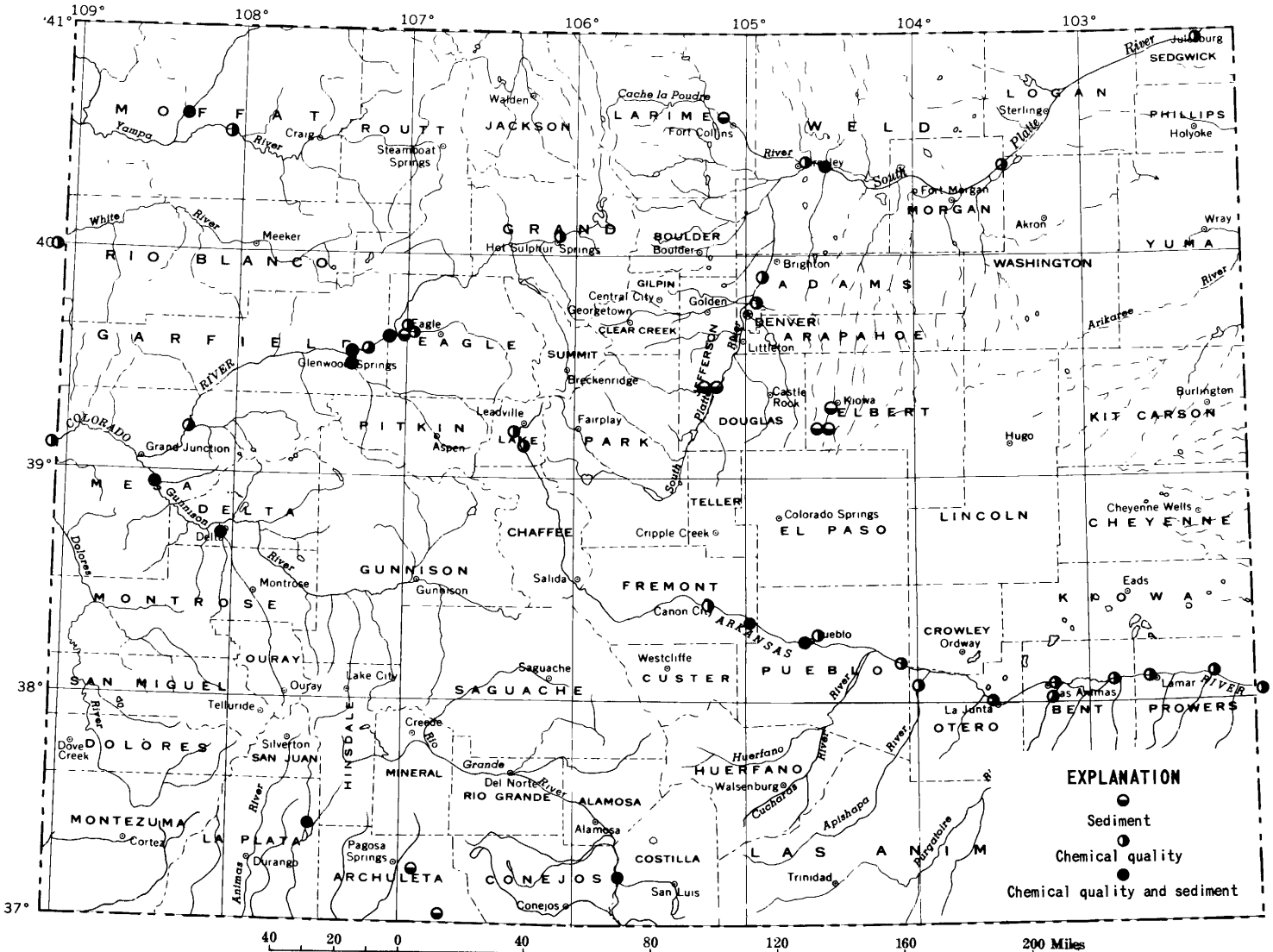

Figure 2.—Map of Colorado showing locations of sites where data on quality of surface water were obtained during the water year. Water-temperature data were obtained daily at some of these sites.

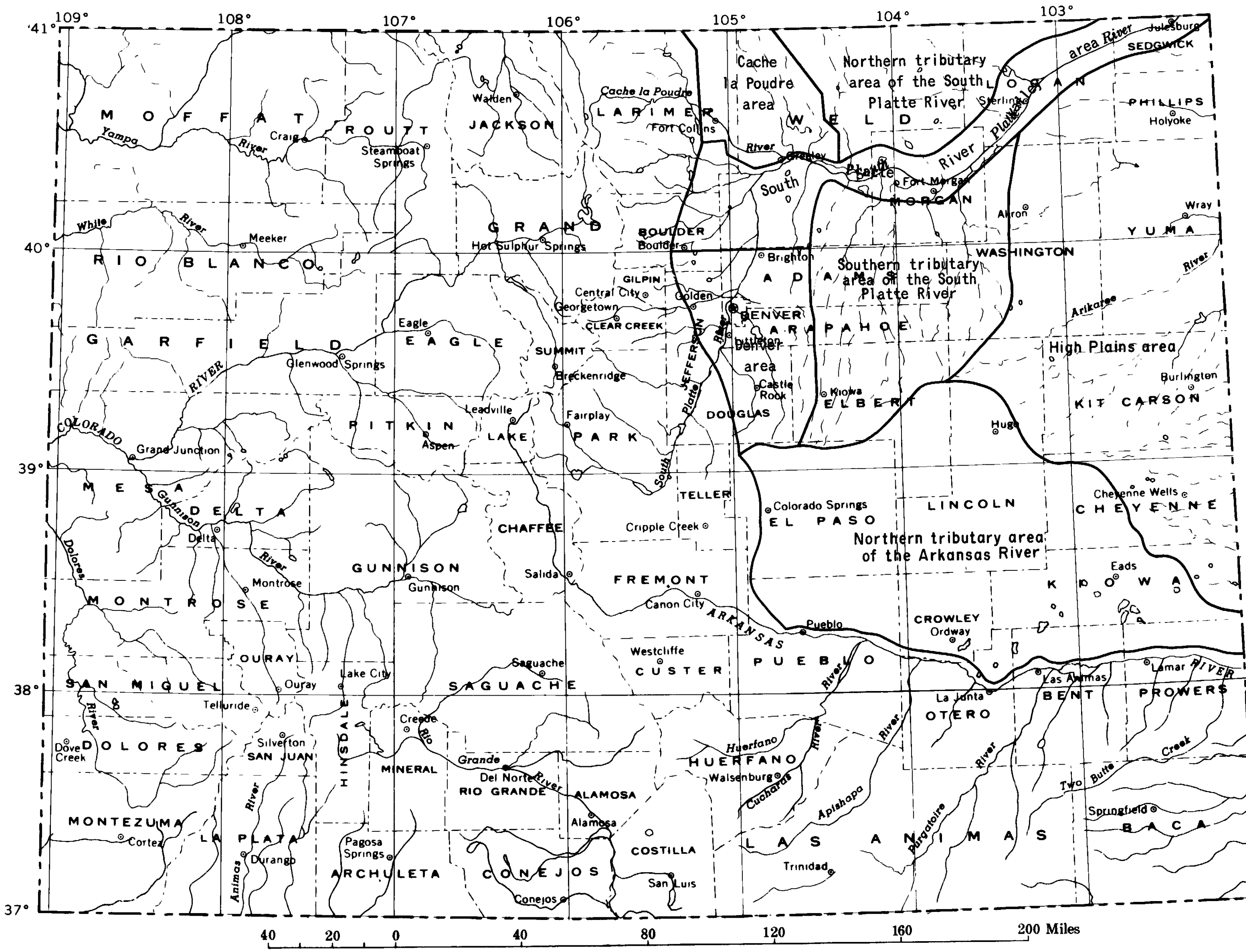

Figure 3.— Map of Colorado showing areas where data were obtained on the chemical quality of ground water.

Sediment

Suspended-sediment samples generally were collected periodically with depth-integrating cable-suspended or hand samplers at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream.

At a few sites on ephemeral streams, suspended-sediment samples were collected daily during periods of flow. Daily sediment loads were computed by standard methods. For periods when no samples were collected, daily loads were estimated.

In addition to the records of the quantities of suspended sediment, records of periodic measurements of the particle-size distribution of the suspended sediment and the bed material are included.

SELECTED REFERENCES

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Iorns, W. V., and others, 1964, Water resources of the Upper Colorado River Basin--basic data: U.S. Geol. Survey Prof. Paper 442, 1,036 p., 4 pls., 1 fig.

_____1965, Water resources of the Upper Colorado River Basin--technical report: U.S. Geol. Survey Prof. Paper 441, 370 p., 9 pls., 147 figs.

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Meinzer, O. E., 1923, The occurrence of ground water in the United States: U.S. Geol. Survey Water-Supply Paper 489, 321 p.

_____1923, Outline of ground-water hydrology, with definitions: U.S. Geol. Survey Water-Supply paper 494, 71 p.

Rainwater, F. H., and Thatcher, L. L., 1960, Methods for collection and analysis of water samples: U.S. Geol. Survey Water-Supply Paper 1454, 301 p.

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U.S. Geol. Survey, 1964, Quality of surface waters in Colorado, October 1962 to September 1963: Open-file release, 83 p.

U.S. Inter-Agency Committee on Water Resources, A study of methods used in measurement and analysis of sediment loads in streams:

Report 11, 1957, The development and calibration of visual accumulation tube: St. Anthony Falls Hydraulic Lab., Minneapolis, Minn., 109 p., 43 figs.

Report 12, 1957, Some fundamentals of particle-size analysis: Washington, U.S. Govt. Printing Office, 55 p., 9 figs.

Report AA, 1959, Federal Inter-agency sedimentation instruments and reports: St. Anthony Falls Hydraulic Lab., Minneapolis, Minn., 41 p., 27 figs.

Report 13, 1961, The single-stage sampler for suspended sediment: Washington, U.S. Govt. Printing Office, 105 p., 51 figs.

Report 14, 1963, Determinations of fluvial sediment discharge: Washington, U.S. Govt. Printing Office, 151 p., 70 figs.

WATER-SUPPLY PAPERS

The table below shows the annual series of Water-Supply Papers that give information on quality of surface waters in Colorado. Data for the Missouri River basin are given in parts 5-6; for the Arkansas River and Rio Grande basins, in parts 7-8; and for the Colorado River basin, in parts 9-14.

Water-supply paper numbers and parts, water years 1941-65

Report year	Parts 1-14 (1941-47)	Parts 5-6	Parts 7-8	Parts 9-14	Irrigation (1951-63)a
1941	942	--	--	--	--
1942	950	--	--	--	--
1943	970	--	--	--	--
1944	1022	--	--	--	--
1945	1030	--	--	--	--
1946	1050	--	--	--	--
1947	1102	--	--	--	--
1948	--	b1132	c1133	--	--
1949	--	b1162	c1163	--	--
1950	--	1187	1188	1189	--
1951	--	1198	1199	1200	1264
1952	--	1251	1252	1253	1362
1953	--	1291	1292	1293	1380
1954	--	1351	1352	1353	1430
1955	--	1401	1402	1403	1465
1956	--	1451	1452	1453	1485
1957	--	1521	1522	1523	1524
1958	--	1572	1573	1574	1575
1959	--	1643	1644	1645	1699
1960	--	d1743	d1744	d1745	d1746
1961	--	1883	d1884	d1885	d1886
1962	--	1943	1944	1945	1946
1963	--	1949	1950	1951	d1952
1964-65	--	e1959	1960-61	f1962	

a Annual series, "Quality of Surface Waters for Irrigation, Western States."
b Includes parts 1-6.
c Includes parts 7-14.
d In preparation.
e Part 6 only.
f Parts 9-10 only.

PART 6. MISSOURI RIVER BASIN

PLATTE RIVER BASIN

6-7142. BURLINGTON DITCH BELOW HEADGATE, AT DENVER, COLO.

LOCATION.--At York Street Bridge in Denver, Denver County, about 0.7 mile below headgate and about 1 mile upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: June 1962 to September 1965.
REMARKS.--Records of discharge for water year October 1964 to September 1965 furnished by State engineer of Colorado.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 14, 1964.....		13	0.12	70	19	126	7.7	206	0	151	110	1.5	0.6	0.32	637	0.87		252	83	3.4	1020	6.9
Nov. 16.....	123	13	.27	63	22	129	9.8	428	0	70	124	1.8	.4	.46	612	.83	203	248	0	3.6	1130	7.3
Dec. 16.....	126	14	.24	66	21	143	11	312	0	116	131	.9	1.4	.28	687	.93	234	252	0	3.9	1280	7.1
Jan. 15, 1965.....	128	14	.24	62	24	126	9.4	450	0	59	114	1.8	.5	.39	624	.85	216	252	0	3.4	1120	7.6
Feb. 26.....	98	16	.44	70	17	136	8.6	324	0	139	127	1.2	.0	.32	668	.91	177	244	0	3.8	1150	7.2
Mar. 24.....	140	16	.17	60	22	114	9.2	286	0	121	118	1.2	.0	.32	635	.86	240	240	5	3.2	1050	6.9
Apr. 28.....	25	9.5	.04	51	18	65	3.9	149	0	106	79	1.2	3.6	.09	427	.58	28.8	202	80	2.0	696	6.9
May 19.....	29	11	.11	50	18	115	6.3	235	0	102	143	2.3	3.3	.23	546	.74	42.8	196	3	3.5	1020	7.0
June 16.....	816	12	.82	26	4.4	20	1.8	68	0	40	16	.8	3.7	.04	164	.22	361	82	26	1.0	258	6.8
July 29.....	328	13	.34	33	5.8	50	3.3	88	0	60	52	.9	5.2	.06	263	.36	233	106	34	2.1	453	6.8
Aug. 13.....	673	11	.11	40	6.1	28	4.4	117	0	54	23	.7	1.4	.08	231	.31	420	124	28	1.1	372	6.9
Sept. 14.....	273	14	.05	50	12	55	4.9	152	0	93	46	1.0	14	.12	363	.49	268	172	47	1.8	613	7.0

6-7205. SOUTH PLATTE RIVER AT HENDERSON, COLO.

LOCATION.--At bridge on State Highway 22, 1,200 feet downstream from gaging station and 0.2 mile west of Henderson, Adams County.
DRAINAGE AREA.--4,713 square miles upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: July 1955 to September 1957, June 1962 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 14, 1964.....	40	17	0.04	114	27	139	8.7	306	0	258	133	1.5	25	0.40	890	1.21	96.1	395	144	3.0	1320	7.5
Nov. 16.....	135	14	.19	84	21	120	9.9	242	0	206	112	1.1	18	.36	716	.97	261	295	96	3.0	1090	7.2
Dec. 16.....	78	18	.07	102	26	155	10	264	0	249	145	.7	23	.37	900	1.22	190	362	145	3.5	1390	6.9
Jan. 15, 1965.....	71	16	.14	104	23	146	11	358	0	245	113	1.7	.3	.46	848	1.15	162	355	61	3.4	1350	7.3
Feb. 26.....	132	17	.17	87	24	159	10	344	0	219	122	1.3	.6	.41	797	1.08	284	316	34	3.9	1290	7.2
Mar. 24.....	209	16	.36	74	23	129	11	336	0	152	115	1.3	.0	.41	700	.95	395	280	4	3.4	1150	7.2
Apr. 28.....	915	10	.01	42	21	61	4.2	162	0	98	64	.9	3.8	.12	398	.54	983	192	59	1.9	667	6.9
May 19.....	352	12	.32	55	18	71	4.6	198	0	124	68	1.9	.4	.21	448	.61	426	208	46	2.1	733	6.9
June 16.....	1220	11	.52	29	4.6	25	2.5	68	0	59	18	.7	1.8	.06	192	.26	632	91	35	1.1	308	6.8
July 29.....	2060	11	.16	34	5.4	24	3.0	87	0	63	17	.6	1.6	.08	210	.29	1170	106	35	1.0	327	6.8
Aug. 13.....	698	13	.00	45	7.5	44	4.8	132	0	81	32	.7	1.0	.06	298	.41	562	144	36	1.6	482	6.9
Sept. 14.....	254	16	.09	74	17	90	6.3	216	0	149	85	1.1	14	.19	575	.78	394	252	75	2.5	935	7.1

6-7525. CACHE LA POUDRE RIVER NEAR GREELEY, COLO.

LOCATION.--At gaging station at highway bridge, 3 miles east of courthouse in Greeley, Weld County, and 3 miles upstream from mouth.
DRAINAGE AREA.--1,877 square miles.
RECORDS AVAILABLE.--Chemical analyses: November 1951 to September 1952, August 1954 to August 1956, December 1963 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 14, 1964.....	54	14	0.12	184	86	125	10	483	0	659	44	0.6	6.8	0.28	1450	1.97	211	815	419	1.9	1760	7.8
Nov. 16.....	79	16	.12	192	100	134	14	617	0	616	46	1.1	22	.29	1530	2.08	326	890	384	2.0	1890	7.6
Dec. 15.....	79	18	.15	148	92	167	18	491	0	617	110	.9	.8	.30	1480	2.01	316	750	347	2.7	1880	7.5
Jan. 13, 1965.....	66	20	.19	192	138	200	18	921	0	515	158	.3	.7	.33	1760	2.39	314	1050	294	2.7	2350	7.6
Mar. 3.....	67	16	.02	180	80	201	6.5	358	0	674	162	.9	2.5	.28	1580	2.15	286	780	486	3.1	2110	7.1
Mar. 24.....	62	17	.01	168	85	169	7.0	408	0	645	102	.9	.0	.32	1450	1.97	243	770	435	2.7	1900	7.3
Apr. 28.....	18	10	.02	185	108	143	5.8	353	0	855	39	1.0	8.8	.30	1650	2.24	80.2	906	616	2.1	1940	7.5
May 19.....	9.5	12	.08	176	83	123	6.3	372	0	654	35	1.5	15	.29	1330	1.81	34.1	780	475	1.9	1680	7.6
June 16.....	1480	9.9	.26	50	13	21	6.4	75	0	144	10	.5	1.0	.07	308	.42	1230	180	118	.7	459	6.6
July 15.....	23	13	.02	188	85	138	7.8	342	0	733	42	.9	11	.32	1390	1.89	86.3	820	539	2.1	1800	7.7
Aug. 13.....	19	14	.00	194	83	134	8.2	369	0	706	40	.8	10	.34	1430	1.94	73.4	825	522	2.0	1810	7.6
Sept. 14.....	38	11	.00	170	77	124	5.8	340	0	665	30	.9	12	.21	1340	1.82	137	740	461	2.0	1660	7.8

6-7540. SOUTH PLATTE RIVER NEAR KERSEY, COLO.

LOCATION.--At gaging station at bridge on State Highway 37, 1.9 miles north of railroad in Kersey, Weld County, and 2.5 miles downstream from Cache la Poudre River.
DRAINAGE AREA.--9,598 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1949 to September 1953, August 1954 to August 1957, June 1962 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 8, 1964	206																				1800	
Oct. 22	376																				1800	
Nov. 5	330																				1880	
Nov. 19	617																				2520	
Dec. 2	517																				2450	
Dec. 15	495																				2130	
Dec. 29	490																				1720	
Jan. 13, 1965	404																				1740	
Jan. 26	459																				1630	
Feb. 8	578																				1570	
Mar. 3	440																				1630	
Mar. 26	490																				1650	
Apr. 9	384																				1680	
May 5	77																				1730	
May 19	80																				1640	
June 3	357																				1530	
June 16	5960																				567	
June 22	10600																				1620	
July 2	1460																				902	
July 22	2620																				948	
Aug. 13	426																				1270	
Aug. 24	908																				1210	
Sept. 28	1710																				1330	

6-7540. SOUTH PLATTE RIVER NEAR KERSEY, COLO.--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Oct. 22, 1964	1430	54		376	223	226	--	--		--		--	--	--	--	--	--	
Nov. 5	1420	53		330	99	88	--	--		--		--	--	--	--	--	--	
Nov. 19	1425	42		617	264	440	--	--		--		--	--	--	--	--	--	
Dec. 2	1420	42		517	124	173	--	--		--		--	--	--	--	--	--	
Dec. 15	1430	39		495	214	286	--	--		--		--	--	--	--	--	--	
Dec. 29	1330	38		490	156	206	--	--		--		--	--	--	--	--	--	
Jan. 13, 1965	1310	37		404	195	213	--	--		--		--	--	--	--	--	--	
Jan. 26	1300	36		459	194	240	--	--		--		--	--	--	--	--	--	
Feb. 8	1120	37		578	188	293	--	--		--		--	--	--	--	--	--	
Mar. 3	1110	32		440	169	201	--	--		--		--	--	--	--	--	--	
Mar. 26	1220	42		490	170	225	32	36		--		77	80	90	100	--	--	VPWC
Apr. 9	1140	56		384	68	70	28	34		--		72	80	91	100	--	--	VPWC
May 5	1035	56		77	5	1	--	--		--		--	--	--	--	--	--	
May 19	1415	70		80	18	3.9	--	--		--		--	--	--	--	--	--	
June 3	1120	63		357	81	78	37	43		--		79	87	98	100	--	--	VPWC
June 16	1700	65		5960	1910	30700	46	52		58		70	78	85	92	95	98	VPWC
June 22	1415	68		10600	796	22800	38	41		51		61	67	81	95	98	100	VPWC
July 2	1045	67		1460	407	1600	47	58		74		87	92	97	100	--	--	VPWC
July 22	1340	75		2620	1720	12200	32	35		44		57	64	70	85	97	99	VPWC
Aug. 13	1245	74		426	143	164	42	46		--		74	77	88	99	100	--	VPWC
Aug. 24	0930	64		908	770	1890	57	68		81		89	92	98	100	--	--	VPWC
Sept. 14	1230	66		357	60	58	--	--		--		49	55	91	100	--	--	V
Sept. 28	0930	58		1710	246	1140	21	24		--		51	64	84	99	100	--	VPWC

6-7540. SOUTH PLATTE RIVER NEAR KERSEY, COLO.--Continued

Particle-size analyses of bed material, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Bed material: Percent finer than size indicated, in millimeters											Method of analysis
							0.062	0.125	0.250	0.500	1.000	2.000	4.000	8.000	16.00	32.00	64.00	
May 5, 1965.....	1035			77				--	0	8	38	66	85	100	--			S
June 16.....	1700			5960				0	3	13	28	55	86	100	--			SV
June 22.....	1415			10600			0	1	6	24	37	54	73	91	100			SV
July 2.....	1045			1460				0	2	18	36	50	65	85	100			SV

6-7580. KIOWA CREEK AT ELBERT, COLO.

LOCATION.--At gaging station, 0.2 mile southeast of Elbert, Elbert County, and 0.5 mile upstream from West Kiowa Creek.
DRAINAGE AREA.--28.6 square miles.
RECORDS AVAILABLE.--Sediment records: April 1956 to September 1965 (discontinued).
EXTREMES, 1964-65.--Sediment concentrations: Maximum daily, 45,000 ppm June 17; minimum daily, no flow on many days.
Sediment loads: Maximum daily, 290,000 tons June 17; minimum daily, no flow on many days.
EXTREMES, 1956-65.--Sediment concentrations: Maximum daily, 45,000 ppm June 17, 1965; minimum daily, no flow on many days each year.
Sediment loads: Maximum daily, 290,000 tons June 17, 1965; minimum daily, 0 tons on many days each year.
REMARKS.--No flow during period October to March; record is omitted.

Suspended sediment, water year October 1964 to September 1965
(*Where no daily concentrations are reported, loads are estimated*)

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..							0	--	0
2..							0	--	0
3..							0	--	0
4..							0	--	0
5..							0	--	0
6..							0	--	0
7..							0	--	0
8..							0	--	0
9..							0	--	0
10..							0	--	0
11..							0	--	0
12..							0	--	0
13..							0	--	0
14..							0	--	0
15..							0	--	0
16..							0	--	0
17..							2280	45000	290000
18..							380	23000	24000
19..							20	2000	110
20..							10	1200	32
21..							8	1000	22
22..							6	--	13
23..							4	--	7
24..							3	--	4
25..							3	--	4
26..							2	--	2
27..							2	--	2
28..							2	--	2
29..							2	--	2
30..							1	--	1
31..							--	--	--
Total	0		0	0		0	2723	--	314201

6-7580. KIOWA CREEK AT ELBERT, COLO.--Continued

Suspended sediment, water year October 1964 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	JULY			AUGUST			SEPTEMBER		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	1.0		1.0	0		0			
2	1		1	0		0			
3	.5		.2	.1		T			
4	0		0	0		0			
5	0		0	0		0			
6	0		0	0		0			
7	5	670	9	0		0			
8	.1		T	0		0			
9	.2		T	0		0			
10	.1		T	0		0			
11	.1		T	0		0			
12	.1		T	0		0			
13	.1		T	0		0			
14	.1		T	0		0			
15	0		0	0		0			
16	0		0	0		0			
17	0		0	0		0			
18	0		0	.1		T			
19	0		0	0		0			
20	0		0	0		0			
21	0		0	0		0			
22	0		0	0		0			
23	0		0	0		0			
24	.1		T	0		0			
25	0		0	0		0			
26	0		0	0		0			
27	.1		T	0		0			
28	0		0	0		0			
29	0		0	0		0			
30	0		0	0		0			
31	0		0	0		0			
Total	8.5		11.3	0.2		T	0		0

Total discharge for year (cfs-days)..... 2731.7
Total load for year (tons)..... 314212.3

T Less than 0.05 ton.

6-7580. KIOWA CREEK AT ELBERT, COLO.--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
June 18, 1965.....	1230			275	20800	15400	32	34		49		66	72	77	84	92	97	VPWC
June 18.....	1545			230	13300	8260	40	45		63		88	96	99	100			VPWC

Particle-size analysis of bed material, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Bed material: Percent finer than size indicated, in millimeters											Method of analysis
							0.062	0.125	0.250	0.500	1.000	2.00	4.000	8.000	16.00	32.00	64.00	
June 18, 1965.....	1230			275			0	2	4	18	46	74	92	98	100			S

6-7581. WEST KIOWA CREEK AT ELBERT, COLO.

LOCATION.--At gaging station, 260 feet downstream from bridge on State Highway 217, 0.2 mile south of Elbert, Elbert County, and 0.5 mile upstream from mouth.
DRAINAGE AREA.--35.9 square miles.
RECORDS AVAILABLE.--Sediment records: October 1962 to September 1965 (discontinued).
EXTREMES, 1964-65.--Sediment concentrations: Maximum daily, 45,000 ppm June 17; minimum daily, no flow on many days during October to December.
Sediment loads: Maximum daily, 89,000 tons June 17; minimum daily, 0 tons on many days during October to December.
EXTREMES, 1962-65.--Sediment concentrations: Maximum daily, 45,000 ppm June 17, 1965; minimum daily, no flow on many days.
Sediment loads: Maximum daily, 89,000 tons June 17, 1965; minimum daily, 0 tons on many days.
REMARKS.--Flow affected by ice Mar. 2-6.

Suspended sediment, water year October 1964 to September 1965
(Where no daily concentrations are reported, loads are estimated)

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1							0		0
2							0		0
3							0		0
4							0		0
5							0		0
6							0		0
7							0		0
8							0		0
9							0		0
10							.3		T
11							.3		T
12							.3		T
13							.1		T
14							.3		T
15							.2		T
16							.1		T
17							0		0
18							0		0
19							.3		T
20							.2		T
21							.3		T
22							.4		T
23							.8		.1
24							.8		.1
25							.4		T
26							.4		T
27							.4		T
28							.3		T
29							.3		T
30							.2		T
31							.6		.1
Total	0		0	0		0	7.0		0.6

T Less than 0.05 ton.

6-7581. WEST KIOWA CREEK AT ELBERT, COLO.--Continued

Suspended sediment, water year October 1964 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	JANUARY			FEBRUARY			MARCH		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	1.6		0.3	0.2		T	0.2		T
2	1.7		.4	.1		T	.2		T
3	1.1		.2	.4		T	.2		T
4	.7		.1	.3		T	.2		T
5	.2		T	.1		T	.3		T
6	.2		T	.1		T	.4		T
7	.2		T	.1		T	.6		0.1
8	.2		T	.1		T	.5		T
9	.2		T	.1		T	.8		.1
10	.3		T	.2		T	.7		.1
11	.2		T	.2		T	.5		T
12	.2		T	.2		T	.6		.1
13	.5		T	.4		T	.5		T
14	.6		.1	.7		0.1	.5		T
15	.2		T	.5		T	.5		T
16	.2		T	.5		T	.5		T
17	.3		T	.5		T	.5		T
18	.3		T	.8		.1	.5		T
19	.2		T	.8		.1	.6		.1
20	.1		T	.4		T	.7		.1
21	.1		T	.3		T	.7		.1
22	.1		T	.3		T	.7		.1
23	.2		T	.1		T	.8		.1
24	.3		T	.4		T	.6		.1
25	.1		T	.6		.1	.6		.1
26	.1		T	.6		.1	.4		T
27	.4		T	.6		.1	.5		T
28	.6		.1	.2		T	.5		T
29	.4		T	--		--	.6		.1
30	.1		T	--		--	1.2		1.0
31	.1		T	--		--	.9	250	.6
Total	11.7		1.5	9.8		1.0	17.0		3.3

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	0.6		0.2	0.1		T	0.2	--	T
2	.4		T	.1		T	.1	--	T
3	.4		T	.1		T	.1	--	T
4	.4		T	.1		T	.1	--	T
5	.4	31	T	.1		T	2.2	--	0.6
6	.3		T	.1		T	.6	--	.1
7	.2		T	.1		T	.2	--	T
8	.2		T	.1		T	.1	--	T
9	.2		T	.1		T	.1	--	T
10	.2		T	.1		T	.1	--	T
11	.4		T	.1		T	.2	--	T
12	.3		T	.1		T	.2	--	T
13	.2		T	.1		T	.1	--	T
14	.2		T	.1		T	.1	--	T
15	.2		T	.1		T	.1	--	T
16	.2		T	.1		T	.2	--	T
17	.1		T	.1		T	710	45000	89000
18	.1		T	.1		T	150	14000	5700
19	.1		T	.1		T	50	5200	700
20	.2		T	.1		T	20	890	48
21	.2		T	.2		T	10	340	9
22	.2		T	.3		T	5	--	3
23	.2		T	.5		T	5	--	3
24	.2		T	.6		0.1	4	--	2
25	.3		T	.7		.1	3	--	1
26	.3		T	.6		.1	2	--	.5
27	.4		T	.5		T	2	--	.5
28	.3		T	.4		T	2	--	.5
29	.2		T	.3		T	2	--	.5
30	.1		T	.3		T	2	--	.5
31	--		--	.2		T	--	--	
Total	7.7		0.6	6.6		0.5	971.7	--	95469.2

T Less than 0.05 ton.

6-7581. WEST KIOWA CREEK AT ELBERT, COLO.--Continued

Suspended sediment, water year October 1964 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	JULY			AUGUST			SEPTEMBER		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	1.0		0.2	0.3	--	T	0.5		0.3
2	1.0		.2	.2	--	T	.4		.2
3	.8		.1	19	2600	S 510	.4		.2
4	.8		.1	2.6	720	5	.4		.2
5	.9		.1	1.6	470	2	.4		.2
6	1.0		.2	.7	--	.5	.3		.1
7	16	4900	210	.3	--	.1	.2		.1
8	1.0		.2	.3	--	.1	.2		.1
9	.8		.1	.3	--	.1	.2		.1
10	.6		.1	.3	--	.1	.2		.1
11	.5		T	.3	--	.1	.2		.1
12	.4		T	.2	--	.1	.3		.1
13	.4		T	.2	--	.1	.3		.1
14	.4		T	.2	--	.1	.2		.1
15	.3		T	.2	--	.1	.3		.1
16	.3		T	.2	--	.1	.2		.1
17	.1		T	.2	--	.1	.2		.1
18	.2		T	7.3	11000	220	.2		.1
19	.2		T	2.2	680	4	.3		.1
20	.2		T	1.3	--	2	.4		.2
21	.2		T	1.6	--	2	.4		.2
22	.2		T	1.3	--	2	.5		.3
23	.1		T	1.2	--	1	.5		.3
24	.1		T	.8	--	.6	.5		.3
25	.1		T	.8	--	.6	.5		.3
26	.1		T	.7	--	.5	.6		.4
27	.1		T	.8	--	.6	.6		.4
28	.1		T	1.1	--	1	.5		.3
29	.3		T	.7	--	.5	.4		.2
30	.3		T	.5	--	.3	.4		.2
31	.2		T	.4	--	.2	--		
Total	28.7		211.6	47.8	--	753.9	10.7		5.6

Total discharge for year (cfs-days)..... 1118.7
Total load for year (tons)..... 96447.8

S Computed by subdividing day.
T Less than 0.05 ton.

6-7581. WEST KIOWA CREEK AT ELBERT, COLO.--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Mar. 31, 1965.....	1430	64		0.8	240	0.5	85	89		--		100	--	--	--	--	--	PWC
June 17.....	1430	56		14	438	16	79	91		--		100	--	--	--	--	--	PWC
June 17.....	1810	--		37	3200	320	66	76		94		100	--	--	--	--	--	PWC
June 18.....	1200	--		D 150	15200	6200	29	34		46		64	71	79	89	95	100	VPWC
June 18.....	1430	--		D 150	12800	5200	29	33		44		61	67	75	89	94	98	VPWC
June 19.....	1130	--		D 50	5260	710	44	48		62		82	89	96	100	--	--	VPWC
July 7.....	1530	53		D 16	19300	830	36	37		52		76	87	96	98	100	--	VPWC
July 7.....	1610	53		D 16	11100	480	37	42		59		80	89	97	99	100	--	VPWC
Aug. 3.....	1740	65		27	4550	330	46	48		65		83	91	98	100	--	--	VPWC
Aug. 3.....	1820	64		22	3600	210	49	52		67		83	90	97	100	--	--	VPWC
Aug. 3.....	2340	56		3.6	936	9.1	--	--		--		73	82	97	100	--	--	V

D Daily mean discharge.

Particle-size analyses of bed material, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Bed material: Percent finer than size indicated, in millimeters											Method of analysis
							0.062	0.125	0.250	0.500	1.000	2.000	4.000	8.000	16.00	32.00	64.00	
June 19, 1965.....	1130			D 50			0	1	5	24	53	78	96	100	--			S
July 7.....	1530			D 16			0	1	5	20	48	73	89	98	100			S
July 7.....	2300			D 16			--	0	3	23	59	87	97	100	--			S
Aug. 3.....	1820			22			--	0	2	19	54	83	97	100	--			S
Aug. 3.....	2340			3.6			0	1	6	31	60	80	91	98	100			S

D Daily mean discharge.

6-7582. KIOWA CREEK AT KIOWA, COLO.

LOCATION.--At gaging station at cableway, 0.7 mile upstream from bridge on State Highway 86 and 0.7 mile south of Kiowa, Elbert County.
DRAINAGE AREA.--111 square miles.
RECORDS AVAILABLE.--Sediment records: April 1956 to September 1965 (discontinued).
EXTREMES, 1964-65.--Sediment concentrations: Maximum daily, 49,000 ppm June 18; minimum daily, no flow on many days.
Sediment loads: Maximum daily, 290,000 tons June 18; minimum daily, 0 tons on many days.
EXTREMES, 1956-65.--Sediment concentrations: Maximum daily, 49,000 ppm June 18, 1965; minimum daily, no flow on many days each year.
Sediment loads: Maximum daily, 290,000 tons June 18, 1965; minimum daily, 0 tons on many days each year.
REMARKS.--Flow affected by ice Jan. 7-13, 15-25, Jan. 30 to Feb. 10, Feb. 18-20, 26-28, Mar. 6-8.

Suspended sediment, water year October 1964 to September 1965
(Where no daily concentrations are reported, loads are estimated)

Day	OCTOBER			NOVEMBER			DECEMBER		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..							0		0
2..							0		0
3..							0		0
4..							0		0
5..							0		0
6..							0		0
7..							.1		T
8..							.1		T
9..							.1		T
10..							.1		T
11..							.1		T
12..							.1		T
13..							.1		T
14..							.1		T
15..							.1		T
16..							.1		T
17..							.1		T
18..							.1		T
19..							.1		T
20..							.1		T
21..							.1		T
22..							.1		T
23..							.2		T
24..							.2		T
25..							.2		T
26..							.1		T
27..							.1		T
28..							.1		T
29..							.1		T
30..							.1		T
31..							.1		T
Total	0		0	0		0	2.8		T

T Less than 0.05 ton.

6-7582. KIOWA CREEK AT KIOWA, COLO.--Continued

Suspended sediment, water year October 1964 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	JANUARY			FEBRUARY			MARCH		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	0.1		T	0.1		T	0.6		T
2	.2		T	.3		T	.4		T
3	.2		T	.4		T	.5		T
4	.3		T	.4		T	.6		T
5	.4		T	.3		T	1.0		0.1
6	.8		T	.2		T	1.4		.1
7	.4		T	.2		T	1.4		.1
8	.3		T	.1		T	1.6		.2
9	.2		T	.1		T	1.6		.2
10	.2		T	.1		T	1.3		.1
11	.2		T	.1		T	1.0		.1
12	.1		T	.1		T	.8		T
13	.1		T	.1		T	.7		T
14	.1		T	.1		T	.5		T
15	.1		T	.1		T	.6		T
16	.1		T	.1		T	.6		T
17	.2		T	.1		T	.4		T
18	.3		T	.2		T	.4		T
19	.4		T	.4		T	.5		T
20	.3		T	.6		T	.5		T
21	.3		T	.6		T	.5		T
22	.2		T	.4		T	.5		T
23	.2		T	.3		T	.5		T
24	.3		T	.3		T	.5		T
25	.3		T	.4		T	.5		T
26	.2		T	.6		T	.5		T
27	.2		T	1.0		0.1	.6		T
28	.3		T	.8		T	.6		T
29	.4		T	--		--	.8		T
30	.4		T	--		--	1.0		.1
31	.2		T	--		--	.8		T
Total	8.0		0.1	8.5		0.2	23.2		1.3

Day	APRIL			MAY			JUNE		
1	0.8		T	0.4		T	0	--	0
2	.8		T	.3		T	0	--	0
3	.7		T	.2		T	0	--	0
4	.7		T	.1		T	.7	--	T
5	.7		T	.1		T	5.2	220	3.0
6	.6		T	.1		T	2.3	65	.4
7	.6		T	.1		T	1.4	--	.1
8	.5		T	.1		T	1.9	--	.3
9	.7		T	.1		T	1.6	--	.2
10	.7		T	.1		T	1.6	--	.2
11	.8		T	.1		T	2.7	--	.6
12	.4		T	.1		T	2.3	--	.4
13	.5		T	.1		T	2.3	--	.4
14	.5		T	.2		T	2.1	--	.3
15	.6		T	.5		T	2.5	--	.5
16	.5		T	.1		T	3.5	--	1.0
17	.5		T	.1		T	770	27000	56000
18	.5		T	.1		T	2130	49000	290000
19	.5		T	0		0	110	8100	2400
20	.5		T	0		0	45	1800	220
21	.4		T	0		0	20	500	27
22	.5		T	0		0	10	--	17
23	.5		T	0		0	8	--	10
24	.5		T	0		0	6	--	5
25	.5		T	0		0	4	--	2
26	1.0		0.1	0		0	4	--	2
27	1.0		.1	0		0	4	--	2
28	.6		T	0		0	3	--	.8
29	.5		T	0		0	3	--	.8
30	.4		T	0		0	3	--	.8
31	--		--	0		0	--	--	
Total	18.0		0.6	2.9		T	3150.1	--	348694.8

T Less than 0.05 ton.

6-7582. KIOWA CREEK AT KIOWA, COLO.--Continued

Suspended sediment, water year October 1964 to September 1965--Continued
(Where no daily concentrations are reported, loads are estimated)

Day	JULY			AUGUST			SEPTEMBER		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1	3.0	--	0.8	2.7	--	0.6	0.1		T
2	3	--	.8	2.3	--	.4	0		0
3	3	--	.8	49	3400	S 1300	0		0
4	3	--	.8	31	2500	210	0		0
5	3	--	.8	24	2000	130	.2		T
6	3	--	.8	10	630	17	1.5		.1
7	62	4800	800	2.7	--	.6	0		0
8	90	6600	1600	1.6	--	.2	0		0
9	10	630	17	1.6	--	.2	0		0
10	8	470	10	1.0	--	.1	0		0
11	6	310	5	1.0	--	.1	0		0
12	3.5	--	1	.8	--	T	0		0
13	2	--	.3	.6	--	T	0		0
14	1.2	--	.1	.6	--	T	0		0
15	1.2	--	.1	1.0	--	.1	0		0
16	1.4	--	.1	1.2	--	.1	0		0
17	1.4	--	.1	1.6	--	.2	0		0
18	1.4	--	.1	6.6	340	6	0		0
19	1.6	--	.2	10	630	17	0		0
20	1.4	--	.1	5.2	210	3	0		0
21	1.4	--	.1	4.8	--	3	0		0
22	1.3	--	.1	6.3	--	5	0		0
23	1.2	--	.1	4.1	--	2	0		0
24	1.4	--	.1	3.2	--	1	0		0
25	1.2	--	.1	1.9	--	.3	0		0
26	1.2	--	.1	1.9	--	.3	0		0
27	1.6	--	.2	1.9	--	.3	0		0
28	3.8	--	2.0	.6	--	T	0		0
29	2.7	--	.6	.4	--	T	0		0
30	2.7	--	.6	.5	--	T	0		0
31	3.0	--	.8	.1	--	T	--		
Total	230.6	--	2443.7	180.2	--	1697.6	1.8		0.1

Total discharge for year (cfs-days)..... 3626.1
Total load for year (tons)..... 352838.4

S Computed by subdividing day.
T Less than 0.05 ton.

6-7582. KIOWA CREEK AT KIOWA, COLO.--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water;
P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters										Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
June 18, 1965.....	1530	--		D 2130	21500	124000	34	36		49		69	76	83	93	100		VPWC
June 21.....	1350	85		D 20	420	23	51	56		--		83	91	96	100	--		VPWC
July 7.....	1810	--		D 62	31300	5200	42	45		63		90	95	99	100	--		VPWC
July 7.....	1910	63		D 62	24300	4100	51	54		71		90	94	97	99	100		VPWC
July 8.....	0015	54		D 90	15200	3700	56	58		76		86	89	93	97	99	100	VPWC
July 8.....	0815	57		D 90	7700	1900	65	71		83		92	95	99	100	--		VPWC
July 8.....	1620	--		D 90	3790	920	67	72		81		87	90	96	100	--		VPWC
Aug. 3.....	1655	65		65	9520	1700	33	40		49		67	73	79	89	100		VPWC
Aug. 3.....	1730	65		48	6440	830	45	52		62		81	88	95	100	--		VPWC
Aug. 3.....	1810	65		113	8270	2520	38	43		53		76	86	95	99	100		VPWC
Aug. 3.....	1845	64		233	12900	8120	46	52		68		87	92	96	99	100		VPWC
Aug. 3.....	2015	62		198	9280	4960	57	61		73		92	96	99	100	--		VPWC
Aug. 4.....	0100	56		62	2880	480	52	59		72		84	88	96	100	--		VPWC

D Daily mean discharge.

6-7582. KIOWA CREEK AT KIOWA, COLO.--Continued

Particle-size analyses of bed material, water year October 1984 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Bed material: Percent finer than size indicated, in millimeters										Method of analysis
							0.062	0.125	0.250	0.500	1.000	2.000	4.000	8.000	16.00	32.00	64.00	
June 21, 1965.....	1350			D 20			--	0	4	28	68	89	98	100	--			S
July 7.....	1810			D 62			0	2	8	35	71	89	98	100	--			S
July 8.....	0015			D 90			1	1	6	33	73	91	97	100	--			S
July 8.....	0815			D 90			--	0	2	19	57	85	96	100	--			S
July 8.....	1620			D 90			--	0	3	23	59	85	96	100	--			S
Aug. 3.....	1730			48			--	0	4	24	59	84	96	99	100			S
Aug. 3.....	1845			233			--	0	4	25	63	86	96	99	100			S
Aug. 3.....	2015			198			--	0	3	22	59	84	95	100	--			S
Aug. 4.....	0100			62			--	0	4	26	64	89	98	99	100			S

D Daily mean discharge.

6-7600. SOUTH PLATTE RIVER AT BALZAC, COLO.

LOCATION.--At gaging station just upstream from highway bridge at Balzac siding, Morgan County, 2.8 miles northeast of Union and 7.0 miles downstream from Beaver Creek.
DRAINAGE AREA.--16,852 square miles.
RECORDS AVAILABLE.--Chemical analyses: January 1950 to September 1951, August 1954 to September 1957, June 1962 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 14, 1964.....	220	13	0.05	188	83	165	10	340	0	798	56	0.8	2.8	0.23	1540	2.09	915	810	531	2.5	1880	7.8
Nov. 16.....	19	12	.00	192	75	165	10	338	0	784	58	.8	2.0	.21	1520	2.07	78	790	513	2.6	1860	7.9
Dec. 16.....	D10	10	.00	184	75	158	8.8	296	0	766	59	.6	.3	.20	1460	1.99	39	770	527	2.5	1800	7.8
Jan. 15, 1965.....	14	9.4	.00	184	68	155	9.3	284	0	770	56	.8	.3	.19	1460	1.99	55	740	507	2.5	1780	7.8
Feb. 26.....	16	14	.01	188	68	159	9.4	282	0	774	52	.8	2.8	.23	1480	2.01	64	750	519	2.5	1800	7.6
Mar. 24.....	D15	13	.06	160	73	146	7.9	277	0	726	55	.7	1.0	.21	1380	1.88	56	700	473	2.4	1710	7.8
Apr. 28.....	147	13	.17	192	75	171	9.4	318	0	796	66	1.8	4.1	.26	1550	2.11	615	790	529	2.7	1930	7.8
May 19.....	D168	12	.13	180	85	171	9.4	317	0	816	66	1.2	3.8	.27	1540	2.09	699	800	540	2.6	1910	8.1
June 16.....	1,160	14	.08	115	34	79	5.6	217	0	363	32	.9	4.3	.10	757	1.03	2,370	426	248	1.7	1060	7.2
July 15.....	152	15	.21	196	73	154	9.5	274	0	812	62	.9	1.2	.21	1470	2.00	603	790	565	2.4	1890	7.7
Aug. 13.....	326	15	.00	148	46	126	6.7	262	0	552	47	.9	4.0	.20	1080	1.47	951	560	345	2.3	1420	7.8
Sept. 14.....	499	15	.10	176	68	162	8.5	316	0	730	40	1.0	5.9	.19	1450	1.97	1,950	720	461	2.6	1830	8.0

D Estimated daily mean discharge.

6-7640. SOUTH PLATTE RIVER AT JULESBURG, COLO.

LOCATION.--At gaging station at bridge on U.S. Highway 385, 0.9 mile southeast of Julesburg, Sedgwick County, 3 miles upstream from Colorado-Nebraska State line, and 8 miles downstream from Lodgepole Creek.
DRAINAGE AREA.--23,138 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1965.
Water temperatures: October 1945 to September 1965.
EXTREMES, 1964-65.--Dissolved solids: Maximum, 1,700 ppm Feb. 1-28; minimum, 519 ppm June 15-17.
Hardness: Maximum, 801 ppm Dec. 1-31; minimum, 261 ppm June 15-17.
Specific conductance: Maximum daily, 2,540 micromhos Apr. 3; minimum daily, 736 micromhos June 17.
Water temperatures: Maximum, 77°F on several days during June and July; minimum, freezing point on several days during November to February.
EXTREMES, 1945-65.--Dissolved solids: Maximum, 1,860 ppm Apr. 13, 1955; minimum, 429 ppm June 16, 1956.
Hardness: Maximum, 860 ppm Dec. 1, 1960; minimum, 173 ppm Mar. 1-12, 1947.
Specific conductance: Maximum daily, 3,000 micromhos Dec. 28, 30, 1962; minimum daily, 617 micromhos Aug. 19, 1953.
Water temperatures: Maximum (1946-49, 1950-65), 93°F July 28, Aug. 1, 1953, July 7, 18, 1963; minimum, freezing point on many days during winter months.
REMARKS.--Values reported for dissolved solids less than 1,000 ppm are residues at 180°C, and values more than 1,000 ppm are calculated from the determined constituents unless otherwise noted. Values reported for sodium (Na) are determined by analysis and do not include potassium (K). Daily samples for chemical analysis composited by equal volume.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH	Color
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate				
Oct. 1-31, 1964	24.1	--	--	--	--	184	--	367	0	--	--	--	--	--	A1560	2.12	102	772	471	2.9	1990	8.2	--
Nov. 1-30.....	49.2	--	--	--	--	185	--	328	0	--	--	--	--	--	A1590	2.16	211	771	502	2.9	2020	7.1	--
Dec. 1-31.....	75.5	33	0.00	232	54	193	21	348	0	778	76	0.6	4.1	0.25	1560	2.12	318	801	516	3.0	2080	7.8	3
Jan. 1-31, 1965	89.9	31	.00	226	55	200	17	326	0	790	75	.7	4.9	.26	1560	2.12	379	791	524	3.1	2060	7.6	2
Feb. 1-28.....	157	--	--	--	--	212	--	311	0	--	--	--	--	--	A1700	2.31	721	800	545	3.3	2120	7.7	--
Mar. 1-31.....	117	23	.00	212	60	184	15	298	0	800	71	.7	2.0	.26	1510	2.05	477	777	533	2.9	2060	7.2	--
Apr. 1-15.....	91.1	--	--	--	--	200	--	264	0	885	--	--	--	--	A1620	2.20	398	756	539	3.2	2070	7.4	--
Apr. 16-30.....	26.5	--	--	--	--	192	--	258	0	--	--	--	--	--	A1550	2.11	111	736	524	3.1	1980	7.1	--
May 1-31.....	45.9	--	--	--	--	187	--	260	0	--	--	--	--	--	A1480	2.01	183	709	496	3.1	1900	7.2	--
June 1-8.....	130	--	--	--	--	188	--	284	0	--	--	--	--	--	A1490	2.03	523	709	476	3.1	1940	7.9	--
June 9-10.....	160	--	--	--	--	148	--	227	0	--	--	--	--	--	A1200	1.63	518	568	382	2.7	1580	8.2	--
June 11-12.....	238	--	--	--	--	190	--	279	0	--	--	--	--	--	A1520	2.07	977	709	480	3.1	1950	8.0	--
June 13-14.....	204	21	--	152	41	137	11	259	0	535	47	.7	1.3	.23	1070	1.46	589	547	335	2.5	1480	7.8	10
June 15-17.....	163	--	--	--	--	53	--	175	0	--	--	--	--	--	519	.71	228	261	117	1.4	758	7.9	--
June 18.....	2040	20	--	120	25	82	13	232	0	337	29	.6	1.1	.13	770	1.05	4240	401	211	1.8	1070	7.6	--
June 19-23.....	17200	--	--	--	--	51	--	209	0	--	--	--	--	--	591	.80	27450	335	164	1.2	844	7.9	--
June 24-26.....	7330	--	--	--	--	71	--	191	0	--	--	--	--	--	646	.88	12780	339	182	1.7	928	8.0	--
June 27-28.....	4450	--	--	--	--	82	--	205	0	--	--	--	--	--	718	.98	8630	372	204	1.9	1020	8.1	--

A Residue at 180°C.

6-7640. SOUTH PLATTE RIVER AT JULESBURG, COLO.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH	Color
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate				
June 29, 1965..	3400	21	--	158	46	144	11	274	0	565	50	0.7	1.3	0.22	1130	1.54	10370	582	357	2.6	1560	7.8	--
June 30.....	2900	--	--	--	--	111	--	233	0	--	--	--	--	--	930	1.26	7280	424	233	2.3	1270	7.9	--
July 1-27.....	689	--	--	--	--	147	--	259	0	--	--	--	--	--	A1150	1.56	2140	552	340	2.7	1530	6.8	--
July 28.....	2360	19	--	112	24	81	9.8	216	0	324	31	.7	3.6	.14	732	1.00	4660	378	201	1.8	1030	7.6	13
July 29-Aug. 31	1080	--	--	--	--	160	--	266	0	--	--	--	--	--	A1290	1.75	3760	631	413	2.8	1690	7.2	--
Sept. 1-30.....	402	21	0.00	171	55	173	12	290	0	662	61	.8	5.1	.24	1300	1.77	1410	654	416	2.9	1790	7.5	--
Weighted average....	--	--	--	--	--	103	--	235	--	--	--	--	--	--	910	1.23	1480	467	274	2.0	1240	7.6	--
Time-weighted average....	605	--	--	--	--	178	--	296	--	--	--	--	--	--	1440	--	--	708	466	2.9	1880	7.3	--
Tons per day.	--	--	--	--	--	168	--	384	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

A Residue at 180°C.

6-7640. SOUTH PLATTE RIVER AT JULESBURG, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1	1970	2030	2020	2200	2080	2090	2050	1860	--	982	1690	1800
2	2010	--	2030	2090	2150	2100	2010	1830	--	1620	1700	1630
3	2040	--	2010	2040	2070	2040	2540	1870	--	1590	1710	1730
4	2030	2070	2050	2010	2070	2060	2040	1900	--	--	1710	1610
5	1990	2070	2020	2010	2110	--	1930	1850	1700	--	1760	1660
6	2040	1540	2060	2080	2100	2050	2060	1900	1960	1750	1520	1920
7	1960	2030	2050	2030	2120	2050	2060	1910	1920	1140	1740	1870
8	1960	2050	2010	1990	2100	2000	1960	1900	2090	1510	1630	1670
9	2040	2030	2030	2020	--	2020	1960	1920	1510	1520	1730	1680
10	1970	1970	2050	1990	2120	2020	--	1870	1630	1820	1810	1800
11	1960	1960	2050	1960	2020	2010	2060	1880	1890	994	1810	1690
12	1960	1970	2070	1990	2260	2000	2040	1910	1980	1800	1920	1790
13	1970	1970	2100	1980	2230	2050	2040	1910	1740	1800	1700	1690
14	1960	2090	2120	2010	2040	1980	2040	1900	1770	1750	1870	1920
15	2010	--	2150	2030	1900	1920	1980	1900	--	1470	1780	--
16	1970	2000	2270	2010	2010	1990	1840	1880	772	1730	1740	1920
17	1970	1970	2120	2070	2070	2010	1990	1900	736	1530	1710	1680
18	2030	2040	2130	2020	2080	2050	1950	--	1070	1690	1730	1730
19	2000	2050	2100	2050	2120	2090	1900	1880	857	1790	1780	1900
20	1990	2090	1980	2070	1920	2010	1940	1900	862	--	--	1690
21	1990	2030	2070	2030	--	--	1940	1910	797	1580	1750	1860
22	1950	2050	2120	2050	2100	1960	1950	1910	832	1310	1740	1860
23	1970	--	2120	2010	--	2010	1930	1870	--	1710	1600	1720
24	1970	2080	2070	2120	2190	2020	1980	1900	--	1860	1510	1710
25	2000	2040	2060	2150	2190	2060	1940	1050	927	1810	1840	1710
26	1970	--	2050	2170	1940	2010	--	1000	916	979	1310	1730
27	--	2050	2130	--	2060	2020	2540	1370	1020	1410	1320	--
28	1960	2030	2180	2030	2070	1990	1950	1920	1010	1030	1530	--
29	2050	2050	2210	2020	--	2000	1930	1900	1560	1070	1680	1740
30	2120	2000	2210	2050	--	2020	1930	--	1270	1350	1700	1780
31	2090	--	2130	--	--	2040	--	--	--	1270	1680	--
Average	2000	2010	2090	2040	2080	2020	2020	1810	--	1500	1690	1760

6-7640. SOUTH PLATTE RIVER AT JULESBURG, COLO.--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																													Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	54	58	55	59	56	55	64	49	53	61	57	54	56	69	59	54	54	51	59	56	54	56	56	52	56	55	--	68	57	55	58	57
November	57	--	--	53	49	49	59	50	52	55	53	47	51	41	--	49	45	46	41	36	41	41	--	41	39	--	44	32	38	44	--	46
December	41	34	35	43	40	32	34	39	44	33	34	42	46	33	33	38	44	41	43	42	39	36	37	38	34	33	37	34	38	42	37	38
January	42	37	46	36	41	44	35	39	39	42	43	44	39	41	46	39	41	39	41	33	34	38	32	32	32	32	--	34	32	34	--	38
February	32	32	34	33	38	32	35	35	--	33	34	33	34	39	39	38	33	39	41	39	--	33	--	39	41	40	40	--	--	--	--	36
March	35	35	36	49	--	39	41	41	38	44	43	49	49	42	42	39	41	41	35	35	--	35	34	47	33	41	49	42	43	48	47	41
April	49	52	48	45	48	52	49	49	51	--	50	53	50	50	49	52	52	52	52	54	57	59	53	53	54	--	56	59	62	61	--	53
May	63	58	59	59	58	59	59	58	53	54	58	58	56	49	--	44	45	--	43	43	41	44	44	46	42	--	--	--	--	--	--	--
June	--	--	--	--	69	71	70	67	64	66	67	68	70	77	--	69	68	69	68	72	73	73	--	--	74	73	70	72	70	71	--	--
July	76	74	72	--	--	77	70	76	74	74	75	77	73	72	76	76	76	76	77	--	77	77	76	77	76	77	74	76	77	77	74	75
August	67	70	70	69	71	69	70	74	69	72	70	69	69	68	68	70	70	76	73	--	68	72	72	72	--	72	72	73	72	68	66	70
September	73	72	72	73	73	73	72	73	73	72	72	72	70	70	--	69	71	66	59	60	56	54	55	56	56	55	--	--	66	56	--	66

PART 7. LOWER MISSISSIPPI RIVER BASIN

ARKANSAS RIVER BASIN

7-818. CALIFORNIA GULCH AT MALTA, COLO.

LOCATION.--About 20 feet downstream from bridge on State Highway 300 at Malta, Lake County, approximately 100 yards above mouth and 3.8 miles southwest of Leadville.
DRAINAGE AREA.--11.8 square miles.
RECORDS AVAILABLE.--Chemical analyses: August 1964 to September 1965.

Chemical analyses, in parts per million, August 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH	Arsenic (As)	Selenium (Se)
																Calcium, Magnesium	Noncarbonate					
Aug. 26, 1964...	3.2	11	--	96	43	9.6	4.0	22	0	429	8.5	0.2	15	0.08	690	416	398	0.2	841	6.4	0.00	0.01
Sept. 24.....	3.0	12	--	96	56	14	2.7	7	0	455	8.5	.3	14	.10	750	470	464	.3	885	6.0	.00	.02
Oct. 21.....	--	11	0.03	91	49	8.2	2.8	29	0	418	4.4	.2	6.1	.03	662	430	406	.2	809	7.0	.02	.02
Nov. 17.....	2.5	11	.00	90	43	8.2	2.8	22	0	404	4.5	.6	11	.05	657	400	382	.2	799	6.5	.01	.01
Dec. 21.....	3.3	11	--	89	42	7.2	2.8	34	0	397	5.0	.2	11	.03	640	395	367	.2	789	6.4	.00	.01
Jan. 13, 1965...	--	11	--	97	45	7.8	2.8	23	0	438	4.5	.2	17	.06	714	427	408	.2	850	6.2	.00	.01
Feb. 17.....	--	13	--	93	44	8.6	3.0	57	0	419	6.4	.2	16	.05	674	412	365	.2	853	6.4	.00	.01
Mar. 11.....	--	12	--	86	44	7.0	4.0	24	0	391	10	.3	19	.04	645	396	376	.2	801	6.4	.00	.01
Apr. 21.....	--	11	--	93	57	13	5.0	2	0	462	8.4	.4	19	.13	734	468	466	.3	908	5.1	.01	.00
May 21.....	9.4	23	--	146	136	9.0	3.9	1	0	946	3.8	.6	.3	.09	1460	925	924	.1	1500	4.6	.00	.00
June 15.....	11	20	--	93	36	7.2	2.5	0	0	470	4.5	.6	.8	.08	722	380	380	.2	867	4.4	.00	.01
July 8.....	7.7	14	--	84	41	5.0	1.7	27	0	565	4.6	.4	.6	.03	868	378	378	.1	1120	3.3	.01	.01
Aug. 21.....	4.6	17	--	91	66	18	4.9	2	0	542	8.7	.3	7.4	.16	865	496	0	.4	1040	4.3	.00	.00
Sept. 21.....	2.2	13	.82	106	45	19	5.2	0	0	559	14	.4	3.0	.09	870	450	450	.4	1080	4.5	.03	.00

7-818. CALIFORNIA GULCH AT MALTA, COLO.--Continued

Spectrographic analyses, in micrograms per liter, August 1964 to September 1965

Date of collection	Discharge (cfs)	Aluminum (Al)	Beryllium (Be)	Bismuth (Bi)	Cadmium (Cd)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Gallium (Ga)	Germanium (Ge)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Molybdenum (Mo)	Nickel (Ni)	Titanium (Ti)	Vanadium (V)	Zinc (Zn)
Aug. 26, 1964.	3.2	9.0	<0.50	<0.25	<1.2	<1.2	25	<1.2	<5.0	<0.25	6.0	<1.2	>1000	<0.25	25	<0.50	1.8	>10000
Sept. 24.....	3.0	38	<.60	.74	<1.5	<1.5	21	<1.5	<6.0	<.30	18	<1.5	>1000	<.30	39	<.60	13	>10000
Oct. 21.....	--	40	<.67	<.33	<1.7	<1.7	18	<1.7	<6.7	<.33	14	<1.7	>1000	<.33	21	<.67	11	>10000
Nov. 17.....	2.5	13	<.53	<.26	<1.3	<1.3	16	<1.3	<5.3	<.26	9.2	<1.3	>1000	<.26	28	.53	3.7	>10000
Dec. 21.....	3.3	39	<2.0	<1.0	<5.0	<5.0	13	<5.0	<5.0	<20	9.6	<5.0	>10000	<1.0	16	<2.0	12	>10000
Jan. 13, 1965.	--	24	<2.0	<1.0	<5.0	<5.0	15	<5.0	<20	<1.0	77	<5.0	>10000	<1.0	24	5.0	9.0	>10000
Feb. 17.....	--	44	<2.0	<1.0	<5.0	<5.0	20	<5.0	<20	<1.0	225	<5.0	20000	<1.0	19	<2.0	16	69000
Mar. 11.....	--	27	<2.0	<1.0	<5.0	<5.0	<5.0	<5.0	<20	<1.0	100	<5.0	132000	<1.0	20	<2.0	10	92000
Apr. 21.....	--	44	<1.3	<.67	<3.3	<3.3	24	<3.3	<13	<.67	5000	<3.3	24000	<.67	33	<1.3	11	37000
May 21.....	9.4	11600	<40	<20	<100	<100	112	2000	<400	<20	13600	1000	41000	<20	50	<40	<20	860000
June 15.....	11	5600	<1.7	<.83	<4.2	<4.2	<4.2	1150	<17	<.83	127	104	180000	<.83	32	<1.7	<.83	300000
July 8.....	7.7	3300	<1.5	<.67	<3.3	57	35	7000	<13	<.67	34000	170	340000	<.67	67	6.7	3.7	230000
Aug. 21.....	4.6	<2.5	<1.0	<.50	<2.5	<2.5	28	500	<10	<.50	2700	<2.5	>8500	<.50	60	<1.0	<.50	>40000
Sept. 21.....	2.2	<2.5	<1.0	<.50	<2.5	<2.5	72	1450	<10	<.50	1650	<2.5	>8500	<.50	69	<1.0	19	>40000

7-837. ARKANSAS RIVER NEAR MALTA, COLO.

LOCATION.--At gaging station, 56 feet downstream from bridge on U.S. Highway 24, 3 miles downstream from Halfmoon Creek, 4.2 miles south of Malta, Lake County, 7 miles upstream from Lake Creek, and 5.8 miles south of Leadville.
DRAINAGE AREA.--228 square miles.
RECORDS AVAILABLE.--Chemical analyses: August 1964 to September 1965.

Chemical analyses, in parts per million, August 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH	Arsenic (As)	Selenium (Se)
Aug. 28, 1964...	--	7.1	--	19	7.8	3.3	1.0	62	0	31	2.3	0.4	0.2	0.06	94	80	29	0.2	164	7.2	0.00	0.00
Sept. 24.....	--	8.0	--	24	9.2	3.8	1.1	76	0	42	2.2	.1	.5	.01	162	99	37	.2	215	7.3	.00	.01
Oct. 21.....	59	9.3	0.00	27	9.7	5.1	1.1	82	0	49	3.0	.4	.2	.01	152	107	40	.2	234	7.2	.01	.01
Nov. 17.....	66	6.0	.00	27	10	4.5	1.1	79	0	49	2.4	.2	.3	.02	143	108	43	.2	230	7.2	.01	.02
Dec. 21.....	A70	7.2	--	26	11	4.8	1.1	81	0	51	3.3	.2	.2	.00	148	111	45	.2	234	7.1	.02	.03
Jan. 13, 1965...	59	11	--	26	10	5.3	1.1	61	0	48	2.7	.2	.1	.01	153	106	40	.2	234	6.9	.02	.02
Feb. 17.....	84	10	--	24	9.0	5.0	1.1	71	0	45	3.2	.2	.4	.02	143	98	40	.2	216	6.8	.02	.01
Mar. 11.....	48	9.2	--	28	11	4.9	.6	78	0	53	3.4	.2	1.1	.04	150	114	50	.2	240	7.3	.00	.02
Apr. 21.....	102	4.5	--	25	15	6.8	5.8	87	0	61	6.0	.3	.8	.04	174	123	52	.3	290	8.2	.00	.02
May 21.....	570	5.4	--	12	5.1	2.2	.8	25	0	37	1.4	.4	.0	.05	86	51	30	.1	128	7.0	.00	.01
June 15.....	811	6.3	--	15	5.4	1.6	.9	36	0	25	1.9	.5	.1	.04	80	60	30	.1	123	7.0	.00	.01
July 8.....	854	4.8	.35	11	4.1	1.3	.5	37	0	15	1.3	.5	.2	.03	58	45	15	.1	101	7.2	.00	.00
Aug. 21.....	372	7.0	--	18	6.3	4.9	.8	56	0	30	1.9	.4	.1	.02	90	70	24	.3	146	7.2	.00	.00
Sept. 22.....	183	7.2	.24	20	6.8	2.8	.5	62	0	29	2.1	.4	.1	.01	97	77	26	.1	171	7.4	.00	.00

A Daily mean discharge.

7-837. ARKANSAS RIVER NEAR MALTA, COLO.--Continued

Spectrographic analyses, in micrograms per liter, August 1964 to September 1965

Date of collection	Discharge (cfs)	Aluminum (Al)	Beryllium (Be)	Bismuth (Bi)	Cadmium (Cd)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Gallium (Ga)	Germanium (Ge)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Molybdenum (Mo)	Nickel (Ni)	Titanium (Ti)	Vanadium (V)	Zinc (Zn)
Aug. 28, 1964.	--	2.5	<0.57	<0.29	<1.4	<1.4	<1.4	<1.4	<5.7	<0.29	3.4	<1.4	<1.4	1.6	0.66	<0.57	<0.29	630
Sept. 24.....	--	6.2	<.54	<.27	<1.4	<1.4	<1.4	<1.4	<5.4	<.27	57	<1.4	>1000	<.27	1.1	<.54	.59	>300
Oct. 21.....	59	16	<.57	<.29	<1.4	<1.4	1.4	<1.4	<5.7	<.29	300	<1.4	1910	<.29	1.2	<.57	<.29	>10000
Nov. 17.....	66	7.9	<.51	<.26	<1.3	<1.3	2.8	<1.3	<5.1	<.26	48	<1.3	>1000	<.26	1.4	<.51	4.9	>10000
Dec. 21.....	A70	18	<2.0	<1.0	<5.0	<5.0	<5.0	<5.0	<20	<1.0	44	<5.0	600	<1.0	1.3	<2.0	<1.0	2000
Jan. 13, 1965.	59	13	<2.0	<1.0	<5.0	<5.0	<5.0	<5.0	<20	<1.0	37	<5.0	810	<1.0	1.3	2.3	<1.0	>10000
Feb. 17.....	84	<5.0	<2.0	<1.0	<5.0	<5.0	<5.0	<5.0	<20	<1.0	43	<5.0	1950	<1.0	2.4	<2.0	<1.0	3000
Mar. 11.....	48	10	<2.0	<1.0	<5.0	<5.0	<5.0	<5.0	<20	<1.0	19	<5.0	540	<1.0	1.5	<2.0	<1.0	1400
Apr. 21.....	102	15	<1.3	<.67	<3.3	<3.3	<3.3	<3.3	<13	<.67	220	<3.3	1000	<.67	1.9	<1.3	<.67	6400
May 21.....	570	70	<1.3	<.67	<3.3	<3.3	<3.3	<3.3	<13	<.67	360	<3.3	967	<.67	1.9	<1.3	<.67	9333
June 15.....	811	43	<1.7	<.83	<4.2	<4.2	<4.2	<4.2	<17	<.83	108	<4.2	98	5.2	2.4	2.7	<.83	833
July 8.....	854	24	<1.3	<.67	<3.3	<3.3	<3.3	22	<13	<.67	100	<3.3	253	2.4	1.0	<1.3	<.67	800
Aug. 21.....	372	38	<1.0	<.50	<2.5	<2.5	<2.5	<2.5	<10	<.50	675	<2.5	105	<.50	<.50	<1.0	<.50	<10
Sept. 22.....	183	11	<1.0	<.50	<2.5	<2.5	<2.5	<2.5	<10	<.50	140	<2.5	32	<.50	12	<1.0	<.50	1950

A Daily mean discharge.

7-960. ARKANSAS RIVER AT CANON CITY, COLO.

LOCATION.--At gaging station, 800 feet upstream from Sand Creek, 0.7 mile downstream from Grape Creek, and 0.7 mile upstream from First Street Bridge in Canon City, Fremont County.
DRAINAGE AREA.--3,117 square miles.
RECORDS AVAILABLE.--Chemical analyses: November 1963 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 2, 1964	160	11		39	12	14	1.7	152	0	41	8.6	0.4	0.2	0.04	199	.27	86.0	148	23	0.5	328	7.6
Oct. 31	180	13		42	12	16	2.0	164	0	42	11	.5	1.8	.08	212	.29	103	155	20	.6	356	7.7
Nov. 27	361	13		40	9.7	12	1.6	153	0	35	4.3	.6	.6	.03	190	.26	185	140	14	.4	311	7.5
Dec. 22	374	15		40	10	14	1.5	156	0	36	5.2	.4	1.3	.05	197	.27	199	142	14	.5	318	7.8
Jan. 24, 1965	285	13		39	10	13	1.6	147	0	35	6.2	.4	.5	.03	191	.26	147	139	18	.5	311	7.4
Feb. 19	293	13		37	11	13	1.9	142	0	36	6.9	.4	2.3	.02	189	.26	150	137	21	.5	312	7.3
Mar. 19	229	13		38	10	13	1.8	146	0	36	6.7	.7	1.0	.01	189	.26	117	136	16	.5	306	7.8
Apr. 15	278	6.4		39	13	15	2.4	162	0	39	11	.5	.1	.04	213	.29	160	150	17	.5	340	8.0
May 14	886	7.3		24	5.4	6.4	.7	70	0	32	5.5	.4	.3	.04	114	.16	273	82	25	.3	189	7.3
June 10	2130	8.9		24	5.6	5.9	1.4	78	0	28	4.1	.5	.1	.04	109	.15	627	83	19	.3	186	7.2
July 8	4900	7.4		20	6.1	3.7	.9	67	0	21	1.7	.4	.0	.05	86	.12	1140	75	20	.2	148	7.2
Aug. 6	2240	11		30	5.8	7.1	1.6	102	0	21	4.3	.4	.7	.02	134	.18	810	98	14	.3	216	7.5
Sept. 2	1120	10		31	6.6	7.9	1.5	104	0	24	4.5	.5	.0	.04	139	.19	420	104	19	.3	225	7.5

7-992. ARKANSAS RIVER NEAR PORTLAND, COLO.

LOCATION.--At gaging station, 1.0 mile downstream from Willow Spring Creek, 3.0 miles downstream from Beaver Creek, 3.0 miles upstream from Red Creek, and 5.3 miles southeast of Portland, Fremont County.
DRAINAGE AREA.--4,280 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1964 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 2, 1964.....	A160	9.5		81	27	41	3.1	178	0	237	10	0.7	0.2	0.08	508	0.69	219	314	168	1.0	724	7.3
Oct. 31.....	195	12		78	26	41	3.1	176	0	237	11	.8	.1	.08	504	.69	265	302	158	1.0	714	7.4
Nov. 27.....	382	13		64	21	29	2.2	184	0	143	8.9	.7	1.0	.07	375	.51	387	246	95	.8	550	7.4
Dec. 22.....	336	14		67	22	30	2.2	184	0	162	8.6	.7	1.3	.06	398	.54	361	258	107	.8	581	7.7
Jan. 21, 1965.....	296	13		66	19	32	2.2	174	0	159	8.6	.7	1.0	.06	386	.52	308	244	101	.9	569	7.3
Feb. 19.....	266	12		68	23	38	2.2	170	0	193	9.3	.7	1.5	.06	440	.60	316	264	125	1.0	634	7.2
Mar. 19.....	195	13		73	23	34	2.6	180	0	189	11	.7	1.4	.03	456	.62	240	278	130	.9	646	7.8
Apr. 15.....	279	6.5		67	22	32	2.8	177	0	165	13	.7	1.0	.07	404	.55	304	258	113	.9	607	8.1
May 14.....	940	9.4		41	12	17	1.6	92	0	110	5.0	.5	1.3	.05	234	.32	594	152	77	.6	357	7.5
June 10.....	2350	9.0		33	5.8	8.5	1.3	86	0	51	3.0	.4	.4	.05	150	.20	952	106	35	.4	254	7.2
July 9.....	4020	8.1		31	5.4	5.9	1.4	87	0	38	2.3	.5	.2	.07	130	.18	1410	100	29	.3	216	7.4
Aug. 6.....	2270	11		41	7.3	11	1.9	109	0	55	4.6	.7	.2	.03	187	.25	1150	132	43	.4	291	7.6
Sept. 2.....	A1100	12		49	12	16	1.8	120	0	96	6.5	.7	.1	.06	249	.34	740	171	73	.5	383	7.4
Sept. 29.....	721	11		58	14	20	1.7	148	0	112	6.5	.7	.5	.05	300	.41	584	202	81	.6	474	7.5

A Estimated.

7-992. ARKANSAS RIVER NEAR PORTLAND, COLO.--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters										Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Oct. 2, 1964	1445	59		E 160	38	16	--	--		--		--	--	--	--	--		
Oct. 16	1530	61		191	17	8.8	--	--		--		--	--	--	--	--		
Oct. 31	1545	56		195	16	8.4	--	--		--		--	--	--	--	--		
Nov. 12	1040	39		183	22	11	--	--		--		--	--	--	--	--		
Nov. 27	1030	38		382	31	32	--	--		--		--	--	--	--	--		
Dec. 11	1300	38		313	20	17	--	--		--		--	--	--	--	--		
Dec. 22	1035	38		336	37	34	--	--		--		--	--	--	--	--		
Jan. 8, 1965	1320	38		354	28	27	--	--		--		--	--	--	--	--		
Jan. 21	1120	37		296	23	18	--	--		--		--	--	--	--	--		
Feb. 6	1410	45		261	15	10	--	--		--		--	--	--	--	--		
Feb. 19	1250	41		266	24	17	--	--		--		--	--	--	--	--		
Mar. 5	1200	39		195	30	16	--	--		--		--	--	--	--	--		
Mar. 19	1245	35		195	14	7.4	--	--		--		--	--	--	--	--		
Apr. 2	1420	57		556	605	908	31	39		64		84	91	100	--	--		VPWC
Apr. 15	1120	50		279	43	32	--	--		--		--	--	--	--	--		
Apr. 30	1310	62		857	563	1300	17	17		44		61	73	89	99	100		VPWC
May 14	1440	59		940	318	807	20	25		--		58	73	88	100	--		VPWC
May 27	1245	--		1460	362	1430	13	18		31		57	72	89	98	100		VPWC
June 14	1730	65		2770	588	4400	9	12		20		41	61	85	96	100		VPWC
June 28	1730	64		2880	859	6680	7	8		15		35	53	78	96	100		VPWC
July 9	1750	64		4020	958	10400	8	11		20		45	65	85	98	100		VPWC
July 23	1500	70		2750	458	3400	6	8		--		29	47	71	95	100		VPWC
Aug. 6	1430	67		2270	713	4370	11	13		24		41	54	81	99	100		VPWC
Aug. 18	1145	70		2060	1580	8790	28	32		46		74	82	92	99	100		VPWC
Sept. 2	1315	67		E 1100	403	1200	6	8		--		29	44	83	99	100		VPWC
Sept. 16	1100	61		745	249	501	--	--		--		24	34	64	91	93	100	SV
Sept. 29	1430	59		721	458	892	18	25		--		56	65	83	100	--		VPWC

E Estimated.

7-992. ARKANSAS RIVER NEAR PORTLAND, COLO.--Continued

Particle-size analyses of bed material, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Bed material											Method of analysis
							Percent finer than size indicated, in millimeters											
							0.062	0.125	0.250	0.500	1.000	2.000	4.000	8.000	16.00	32.00	64.00	
May 14, 1965.....	1440			940			0	2	13	39	70	88	100	--	--	--		S
June 28.....	1730			2880			0	3	13	25	37	49	64	79	94	100		SV
July 9.....	1750			4020			--	0	3	24	41	56	72	79	86	100		SV

7-995. ARKANSAS RIVER NEAR PUEBLO, COLO.

LOCATION.--At gaging station at intake of south-side waterworks, 1.6 miles upstream from Dry Creek and 2.5 miles west of city hall in Pueblo, Pueblo County.
DRAINAGE AREA.--4,686 square miles.
RECORDS AVAILABLE.--Chemical analyses: November 1963 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 2, 1964	47	4.6		85	31	45	3.3	185	0	260	14	0.7	0.3	0.05	572	0.78	72.6	338	186	1.1	771	7.4
Oct. 17	72	4.5		84	29	42	3.5	194	0	241	12	.7	.1	.04	550	.75	107	330	171	1.0	751	7.3
Oct. 31	83	7.7		88	33	49	3.6	196	0	272	16	.6	.9	.10	568	.77	127	356	195	1.1	801	7.6
Nov. 12	85	5.4		95	32	47	3.2	209	0	273	11	.7	.1	.06	616	.84	141	368	197	1.1	826	7.3
Nov. 27	243	15		69	23	30	2.4	182	0	164	6.8	.5	1.7	.06	406	.55	266	268	119	.8	593	7.3
Dec. 11	239	13		71	23	33	2.4	188	0	176	8.0	.5	1.2	.05	424	.58	274	272	118	.9	622	7.6
Dec. 22	187	14		75	22	33	2.4	194	0	183	7.2	.7	.3	.06	444	.60	224	280	121	.9	639	7.3
Jan. 8, 1965	215	13		69	20	31	2.2	178	0	162	5.9	.5	1.5	.05	403	.55	234	256	110	.8	589	7.3
Jan. 21	177	12		72	23	35	2.4	178	0	186	11	.5	1.1	.06	442	.60	211	276	130	.9	617	7.4
Feb. 6	231	7.0		71	24	34	2.7	178	0	195	13	.7	.9	.03	473	.64	295	276	130	.9	641	7.8
Feb. 19	215	7.3		74	28	38	2.8	176	0	210	13	.7	2.1	.05	507	.69	294	298	154	1.0	677	7.3
Mar. 5	153	11		91	30	45	3.5	190	0	256	12	.8	3.0	.07	570	.78	235	350	194	1.0	789	7.7
Mar. 19	135	12		74	29	40	2.9	180	0	215	20	.7	1.3	.04	486	.66	177	304	156	1.0	698	7.9
Apr. 2	430	3.6		58	19	28	3.5	149	4	140	12	.7	.6	.07	343	.47	398	222	93	.8	559	8.3
Apr. 15	165	1.4		74	19	38	3.2	127	1	208	15	.8	.6	.07	448	.61	200	262	156	1.0	694	8.5
Apr. 30	822	10		54	16	22	2.0	134	0	123	8.3	.5	1.6	.05	307	.42	681	200	90	.7	465	7.7
May 14	875	9.3		43	11	16	1.1	104	0	97	6.1	.3	.9	.04	242	.33	572	154	69	.6	352	7.4
June 10	1970	9.5		38	8.3	9.6	1.4	102	0	59	3.0	.5	.8	.05	180	.24	957	130	46	.4	301	7.4
June 25	3980	9.5		45	7.8	7.9	1.6	128	0	51	2.8	.6	.2	.05	183	.25	1970	144	39	.3	306	7.5
July 9	3720	7.9		42	5.4	7.0	1.4	108	0	47	2.1	.5	.1	.05	166	.23	1670	126	37	.3	261	7.5
July 23	2220	8.3		35	5.8	8.5	1.5	92	0	49	4.4	.5	.5	.04	162	.22	971	112	37	.4	254	7.5
Aug. 6	2240	12		44	7.3	11	2.1	115	0	60	4.5	.7	.4	.03	202	.27	1220	140	46	.4	309	7.6
Aug. 18	2500	11		55	8.3	15	2.7	132	0	79	5.1	.6	1.3	.04	262	.36	1770	172	64	.5	390	7.6
Sept. 2	1320	12		52	14	19	2.1	122	0	109	6.5	.7	1.2	.06	282	.38	1010	186	86	.6	426	7.6
Sept. 16	718	10		63	15	23	2.0	138	0	135	8.9	.4	.1	.04	333	.45	646	218	105	.7	510	7.3
Sept. 29	750	12		64	16	23	2.1	154	0	131	8.2	.5	4.1	.04	351	.48	711	226	100	.7	534	7.6

7-995. ARKANSAS RIVER NEAR PUEBLO, COLO.--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters										Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Oct. 2, 1964	1700	64		47	25	3.2	--	--		--		--	--	--	--	--	--	
Oct. 31	1420	55		63	15	3.4	--	--		--		--	--	--	--	--	--	
Nov. 12	1210	42		85	7	2	--	--		--		--	--	--	--	--	--	
Dec. 22	1210	40		187	75	38	--	--		--		--	--	--	--	--	--	
Jan. 8, 1965	1600	38		215	42	24	--	--		--		--	--	--	--	--	--	
Jan. 21	1240	39		177	48	23	--	--		--		--	--	--	--	--	--	
Feb. 6	1155	40		231	35	22	--	--		--		--	--	--	--	--	--	
Feb. 19	1430	46		215	101	59	--	--		--		--	--	--	--	--	--	
Mar. 5	1325	43		153	31	13	--	--		--		--	--	--	--	--	--	
Mar. 19	1415	35		135	60	22	--	--		--		--	--	--	--	--	--	
Apr. 2	1645	57		430	633	735	33	41		71		91	96	99	100	--	--	VPWC
Apr. 15	1240	57		165	34	15	--	--		--		--	--	--	--	--	--	
Apr. 30	1545	64		822	653	1450	17	26		38		61	74	87	96	100	--	VPWC
May 14	1655	60		875	483	1140	15	20		--		50	66	89	99	100	--	VPWC
June 14	1430	65		2420	798	5210	8	10		19		39	56	76	92	98	100	VPWC
June 28	1230	65		2580	1430	9960	10	11		16		34	52	75	88	93	95	VPWC
July 9	1250	66		3720	1630	16400	7	11		19		43	61	80	92	98	100	VPWC
July 23	1015	72		2220	3430	20600	6	7		13		30	52	84	98	100	--	VPWC
Aug. 6	1130	68		2240	1240	7500	12	17		24		44	64	88	96	98	100	VPWC
Aug. 18	1730	71		2500	2830	19100	33	36		56		73	79	88	99	100	--	VPWC
Sept. 2	1500	69		1320	289	1030	14	17		--		51	71	92	100	--	--	VPWC
Sept. 16	1250	60		718	160	310	35	42		--		73	83	93	100	--	--	VPWC
Sept. 29	1600	59		750	279	565	23	31		--		81	89	94	100	--	--	VPWC

7-995. ARKANSAS RIVER NEAR PUEBLO, COLO.--Continued

Particle-size analyses of bed material, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Bed material: Percent finer than size indicated, in millimeters											Method of analysis
							0.062	0.125	0.250	0.500	1.000	2.000	4.000	8.000	16.00	32.00	64.00	
Apr. 30, 1965.....	1545			822			0	2	6	22	60	84	94	96	100			S
June 28.....	1230			2580			0	3	25	54	69	80	89	94	100			SV
July 9.....	1250			3720			1	10	32	52	64	76	84	92	100			SV

7-1065. FOUNTAIN CREEK AT PUEBLO, COLO.

LOCATION (revised).--At Eighth Street Bridge in Pueblo, Pueblo County, about 800 feet downstream from gaging station and 1.6 miles upstream from mouth.
DRAINAGE AREA.--926 square miles upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: November 1963 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 2, 1964	0.8	13		221	89	233	7.9	298	0	1060	60	2.2	21	0.25	1990	2.71	4.30	920	676	3.3	2310	7.7
Oct. 31	A1.0	13		212	86	241	7.7	260	0	1070	65	2.2	28	.26	1920	2.61	5.18	885	672	3.5	2300	7.9
Nov. 27	2.4	10		289	214	386	8.5	305	0	1880	95	2.6	263	.21	3510	4.77	22.7	1600	1350	4.2	3740	7.7
Dec. 22	2.8	12		293	187	366	8.2	316	0	1750	84	3.5	210	.21	3250	4.42	24.6	1500	1240	4.1	3460	7.6
Jan. 21, 1965	2.2	8.8		319	249	500	8.7	342	0	2190	90	3.2	302	.19	4130	5.62	24.5	1820	1540	5.1	4220	7.6
Feb. 19	7.8	12		263	120	300	7.5	312	0	1370	70	2.1	60	.21	2510	3.41	52.9	1150	894	3.8	2810	7.6
Mar. 19	8.3	9.7		267	120	307	6.9	292	0	1430	67	2.7	44	.18	2510	3.41	56.3	1160	920	3.9	2780	7.7
Apr. 15	4.4	6.5		273	146	334	7.5	284	0	1570	77	3.1	72	.20	2770	3.77	32.9	1280	1050	4.1	3090	7.7
May 14	A2	9.2		243	183	353	8.8	293	0	1680	80	2.6	67	.18	2840	3.86	15.3	1360	1120	4.2	3380	7.6
June 10	5.8	10		275	123	290	8.0	281	0	1390	68	2.9	59	.19	2440	3.32	38.2	1190	959	3.7	2860	7.8
July 8	A80	16		168	45	145	6.6	248	0	619	42	3.0	8.4	.17	1170	1.59	253	605	402	2.6	1580	7.7
Aug. 6	A650	16		93	30	81	4.9	172	0	337	21	2.7	6.6	.12	674	.92	1180	356	215	1.9	960	7.5
Sept. 2	A150	21		142	46	129	5.9	237	0	542	42	3.4	11	.19	1070	1.46	433	545	351	2.4	1430	7.9

A Daily mean discharge.

7-1170. ARKANSAS RIVER NEAR NEPESTA, COLO.

LOCATION.--At gaging station, 185 (revised) feet downstream from diversion dam of Oxford Farmers Co. canal, 1.3 miles northwest of Nepesta, Pueblo County, and 7.3 miles downstream from Huerfano River.
DRAINAGE AREA.--9,345 square miles, of which 54 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: November 1963 to September 1965.
REMARKS.--Discharges include diversion into Oxford Farmers Co. canal.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 3, 1964.....	84	5.5		111	35	64	9.0	166	0	365	29	1.3	16	0.12	765	1.04	174	420	284	1.4	1010	7.2
Oct. 31.....	168	8.4		123	35	60	5.9	234	0	346	27	1.2	.3	.14	762	1.04	346	452	260	1.2	1020	7.5
Nov. 27.....	345	7.2		98	34	49	4.6	188	0	286	19	1.1	8.2	.08	640	.87	596	384	230	1.1	857	7.1
Dec. 23.....	377	7.8		91	34	48	4.0	187	0	262	18	.9	9.1	.07	602	.82	613	366	213	1.1	821	7.1
Jan. 22, 1965.....	295	6.7		95	33	52	4.5	174	0	299	24	.9	10	.08	653	.89	520	374	231	1.2	864	7.1
Feb. 20.....	393	7.0		96	36	52	4.6	175	0	298	21	.9	13	.08	653	.89	693	388	244	1.1	872	6.9
Mar. 20.....	282	11		99	34	59	4.5	180	0	314	26	1.0	24	.10	674	.92	513	388	240	1.3	940	7.2
Apr. 16.....	200	10		96	35	56	4.5	176	0	319	25	1.0	12	.12	662	.90	357	384	240	1.2	915	7.9
May 15.....	563	9.6		60	18	26	2.0	120	0	156	11	.7	5.4	.06	353	.48	537	226	128	.8	514	7.5
June 11.....	1940	9.5		55	12	18	1.8	123	0	100	7.8	.6	4.0	.06	274	.37	1440	184	83	.6	422	7.2
July 8.....	3820	8.7		48	9.2	12	1.6	118	0	78	4.5	.6	.6	.06	219	.30	2260	158	61	.4	343	7.5
Aug. 6.....	2450	11		56	12	23	3.0	117	0	125	8.9	.9	2.7	.06	304	.41	2010	191	95	.7	461	7.6
Sept. 2.....	778	13		78	21	37	3.4	140	0	214	18	1.0	4.5	.08	463	.63	973	280	165	1.0	669	7.5
Sept. 30.....	856	12		91	25	45	4.0	168	0	261	17	1.2	4.3	.09	555	.75	1280	330	192	1.1	801	7.3

7-1195. APISHAPA RIVER NEAR FOWLER, COLO.

LOCATION.--At gaging station at county highway bridge, 4 miles southeast of Fowler, Otero County, and 5.4 miles upstream from mouth.
DRAINAGE AREA.--1,125 square miles.
RECORDS AVAILABLE.--Chemical analyses: November 1963 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 3, 1964.....	0.7	12		519	125	156	5.2	172	0	1930	45	0.5	6.2	0.25	3140	4.27	5.93	1810	1670	1.6	2980	7.4
Oct. 31.....	1.0	13		539	135	162	4.6	282	0	1900	44	.5	2.5	.25	3210	4.37	8.67	1900	1670	1.6	3070	7.3
Nov. 28.....	11	11		144	49	63	4.8	198	0	472	23	.9	6.0	.10	908	1.23	27.0	560	398	1.2	1150	7.4
Dec. 23.....	4.7	11		152	49	59	5.5	194	0	485	23	.7	5.5	.11	910	1.24	11.6	580	421	1.1	1160	7.3
Jan. 22, 1965.....	2.9	11		353	90	110	4.4	238	0	1200	36	.4	5.9	.18	2040	2.77	16.0	1250	1060	1.4	2190	7.5
Feb. 20.....	17	9.5		136	36	62	4.4	172	0	427	24	1.0	9.6	.19	823	1.12	37.8	490	349	1.2	1070	7.3
Mar. 20.....	A1	11		123	39	69	4.7	192	0	407	25	1.0	25	.12	820	1.12	2.21	470	312	1.4	1090	7.5
Apr. 16.....	1.2	13		517	143	155	4.5	262	0	1890	50	.6	4.6	.23	3100	4.22	10.0	1880	1670	1.6	3070	7.6
Ma, 14.....	1.2	9.9		513	141	145	4.2	250	0	1930	49	1.3	4.4	.26	3090	4.20	10.0	1860	1660	1.5	3070	7.7
June 10.....	84	18		261	41	37	8.7	225	0	671	8.5	.6	.3	.08	1200	1.63	272	820	635	.6	1410	7.4
July 8.....	A21	9.4		92	15	28	3.3	116	0	227	9.0	.6	2.2	.11	452	.61	25.6	292	197	.7	650	7.4
Aug. 6.....	A105	15		200	41	75	7.1	164	0	646	18	.7	.9	.10	1110	1.51	315	670	535	1.3	1340	7.4
Sept. 3.....	25	17		138	33	52	3.7	156	0	414	21	1.1	4.6	.12	785	1.07	53.0	480	352	1.0	1030	7.6

A Daily mean discharge.

7-1220. ARKANSAS RIVER NEAR LA JUNTA, COLO.

LOCATION.--At diversion of Fort Lyon Canal, 0.5 mile above headgate and approximately 3 miles west of La Junta, Otero County.
DRAINAGE AREA.--12,210 square miles upstream from gaging station at La Junta.
RECORDS AVAILABLE.--Chemical analyses: January 1964 to September 1965.
REMARKS.--Discharges obtained by adding mean daily flow in the Fort Lyon Canal to mean daily flow in the Arkansas River at La Junta.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 3, 1964.....	59	12		212	80	147	8.2	252	0	878	42	1.2	8.3	0.26	1600	2.18	255	860	653	2.2	1860	7.5
Oct. 31.....	--	10		186	64	117	7.8	260	0	726	40	1.0	7.6	.26	1330	1.81	--	730	517	1.9	1670	7.4
Nov. 28.....	258	11		156	54	102	6.4	232	0	559	34	.9	7.7	.17	1100	1.50	766	610	420	1.8	1370	7.3
Dec. 23.....	481	11		127	40	74	5.9	232	0	406	22	1.0	1.9	.13	834	1.13	1080	480	290	1.5	1090	7.3
Jan. 22, 1965.....	199	12		188	68	127	7.6	260	0	732	38	1.0	5.3	.20	1340	1.82	720	750	537	2.0	1660	7.3
Feb. 20.....	392	12		172	71	119	6.9	230	0	695	35	.8	11	.19	1280	1.74	1350	720	531	1.9	1580	7.3
Mar. 20.....	337	11		150	56	104	5.8	208	0	589	32	1.1	16	.16	1120	1.52	1020	605	434	1.8	1400	7.5
Apr. 16.....	190	12		188	78	132	5.6	226	0	786	41	1.1	12	.22	1420	1.93	728	790	605	2.0	1720	7.5
May 15.....	313	11		143	52	88	4.6	188	0	558	30	.8	7.1	.16	1040	1.41	879	568	414	1.6	1320	7.4
June 11.....	1460	11		92	21	42	3.7	152	0	246	14	.7	5.5	.13	517	.70	2040	318	193	1.0	745	7.4
July 9.....	1160	9.3		67	14	28	2.7	121	0	163	9.8	.6	2.8	.11	361	.49	1130	226	127	.8	536	7.4
Aug. 6.....	1600	13		87	23	40	4.4	150	0	247	11	1.0	3.3	.12	513	.70	2220	312	189	1.0	700	7.5
Sept. 3.....	781	13		119	40	68	4.7	173	0	417	30	1.1	6.0	.15	811	1.10	1710	460	318	1.4	1070	7.5
Sept. 30.....	942	12		114	39	62	4.1	190	0	397	21	1.1	5.7	.09	804	1.09	2040	446	290	1.3	1070	7.7

7-1240. ARKANSAS RIVER AT LAS ANIMAS, COLO.

LOCATION.--At gaging station, 0.4 mile downstream from bridge on U.S. Highway 50, 1.5 miles north of courthouse in Las Animas, Bent County, and 3.5 miles upstream from Purgatoire River.
DRAINAGE AREA.--14,417 square miles, of which 441 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: November 1963 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 3, 1964	19	11		260	97	258	8.5	230	0	1290	79	1.0	1.5	0.41	2280	3.10	117	1040	851	3.5	2560	7.6
Oct. 31	6.0	13		318	113	333	5.5	252	0	1610	94	.9	4.3	.51	2850	3.88	46.2	1260	1050	4.1	3050	7.7
Nov. 28	35	16		369	134	342	4.9	273	0	1820	100	1.1	5.2	.50	3050	4.15	288	1470	1250	3.9	3300	7.5
Dec. 22	2.7	14		333	131	364	5.9	254	0	1780	114	1.1	5.3	.48	2970	4.04	21.7	1370	1160	4.3	3260	7.5
Jan. 22, 1965	8.0	12		363	145	365	5.2	292	0	1820	107	1.1	6.4	.49	3060	4.16	66.1	1450	1210	4.1	3350	7.6
Feb. 19	A52	13		229	86	214	6.1	250	0	1060	65	.9	11	.30	1940	2.64	272	925	720	3.1	2220	7.4
Mar. 19	12	11		325	129	387	6.2	276	0	1740	103	1.1	5.8	.48	3030	4.12	98.2	1340	1110	4.6	3240	7.7
Apr. 15	6.0	3.6		325	129	375	5.7	184	0	1800	100	1.0	1.8	.54	3000	4.08	48.6	1340	1190	4.5	3290	8.0
May 15	24	12		232	92	210	5.2	250	0	1120	67	.9	5.9	.31	1960	2.67	127	960	755	3.0	2290	7.8
June 11	502	12		106	26	56	3.7	162	0	321	21	.8	4.8	.16	648	.88	878	372	239	1.3	893	7.3
July 9	740	11		111	28	74	4.0	158	0	372	27	.8	1.7	.19	729	.99	1460	392	262	1.6	1000	7.3
Aug. 5	703	12		132	33	102	4.9	176	0	490	27	.9	1.5	.16	881	1.20	1670	464	320	2.1	1130	7.3
Sept. 3	216	15		277	106	320	6.3	273	0	1410	111	1.2	4.4	.42	2460	3.35	1430	1120	896	4.1	2840	7.8
Sept. 30	50	13		353	163	500	6.0	327	0	2050	136	1.2	3.9	.54	3540	4.81	478	1550	1280	5.5	4030	7.8

A Daily mean discharge.

7-1285. PURGATOIRE RIVER NEAR LAS ANIMAS, COLO.

LOCATION.--At gaging station at bridge on State Highway 101, 2.3 miles southwest of courthouse in Las Animas, Bent County, and 4.5 miles upstream from mouth.
DRAINAGE AREA.--3,503 square miles.
RECORDS AVAILABLE.--Chemical analyses: November 1963 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 3, 1964	1.0	7.4		345	198	502	5.5	248	0	2340	123	0.8	0.3	0.37	3910	5.32	10.6	1680	1480	5.3	4030	7.6
Oct. 31	1.5	6.9		359	203	546	5.4	286	0	2410	118	.8	1.0	.34	4090	5.56	16.6	1730	1500	5.7	4140	7.8
Nov. 28	2.1	11		339	207	508	5.1	290	0	2340	124	.8	2.9	.37	3960	5.39	22.5	1700	1460	5.4	4110	7.6
Dec. 23	4.2	12		323	191	436	4.5	270	0	2140	108	.8	3.5	.33	3620	4.92	41.1	1590	1370	4.8	3760	7.7
Jan. 22, 1965	2.1	9.5		359	173	483	5.9	330	0	2170	111	.9	2.0	.35	3620	4.92	20.5	1600	1330	5.2	3870	7.5
Feb. 20	3.0	11		277	132	325	5.1	300	0	1520	82	.9	4.8	.27	2730	3.71	22.1	1240	994	4.0	2940	7.4
Mar. 20	A13	12		253	101	255	6.2	272	0	1220	75	1.1	11	.24	2220	3.02	77.9	1040	817	3.4	2470	7.6
Apr. 15	4.6	2.4		369	233	596	5.8	246	0	2760	129	.8	.7	.38	4550	6.19	56.5	1880	1680	6.0	4640	7.8
May 15	3.4	11		353	212	544	4.8	343	0	2460	124	1.8	2.5	.39	4150	5.64	38.1	1750	1470	5.7	4320	7.8
June 10	A7.6	6.8		335	186	433	7.3	235	0	2170	90	.9	.5	.28	3620	4.92	74.3	1600	1410	4.7	3940	7.7
July 9	A500	11		220	91	175	7.0	198	0	1070	32	.6	.3	.08	1810	2.46	2440	925	763	2.5	2110	7.6
Aug. 5	2840	12		128	39	75	6.2	166	0	468	9.7	.6	1.9	.07	833	1.13	6390	480	344	1.5	1100	7.5
Sept. 3	148	13		224	96	196	6.9	242	0	1060	63	.9	2.1	.17	1930	2.62	771	955	756	2.8	2190	7.8

A Daily mean discharge.

7-1305. ARKANSAS RIVER BELOW JOHN MARTIN RESERVOIR, COLO.

LOCATION.--At gaging station, 1.1 miles upstream from Caddoa Creek, 1.7 miles downstream from John Martin Dam, Bent County, and 2.9 miles southeast of Hasty.
DRAINAGE AREA.--18,917 square miles, of which 785 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: August 1942 to August 1943, October 1945 to July 1949, January 1951 to September 1965.
Water temperatures: January 1951 to September 1965.
EXTREMES, 1964-65.--Dissolved solids: Maximum, 4,530 ppm Feb. 1-3; minimum, 296 ppm June 18.
Hardness: Maximum, 1,900 ppm Feb. 1-3; minimum, 224 ppm June 18.
Specific conductance: Maximum daily, 4,620 micromhos Dec. 18, Feb. 1; minimum daily, 476 micromhos June 18.
Water temperatures: Maximum, 76°F July 27; minimum, freezing point Mar. 17.
EXTREMES, 1951-65.--Dissolved solids: Maximum, 4,530 ppm Feb. 1-3, 1965; minimum, 296 ppm June 18, 1965.
Hardness: Maximum, 1,910 ppm Aug. 8, 1955; minimum, 224 ppm July 6, 1960, June 18, 1965.
Specific conductance: Maximum daily, 5,180 micromhos Apr. 21, 1955; minimum daily, 476 micromhos June 18, 1965.
Water temperatures: Maximum, 85°F Aug. 6, 1951; minimum, freezing point on many days during winter months.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). Additional samples were collected for more comprehensive definition of water quality at this station.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 1-12, 1964...	32.8					513		218	0	2310	108				3960	5.39	351	1620	1440	5.5	4060	7.9
Oct. 13-31.....	31.3					393		248	0	1650	144				2890	3.93	244	1270	1070	4.8	3120	7.9
Nov. 1-30.....	27.0					402		290	0	1810	116				3220	4.38	235	1410	1170	4.7	3370	7.8
Dec. 1-6.....	26.5					432		300	0	1930	116				3390	4.61	243	1480	1230	4.9	3530	7.7
Dec. 7-10.....	28.0					528		280	0	2310	144				4020	5.47	304	1690	1460	5.6	4110	7.8
Dec. 11-15.....	23.8					450		254	0	2040	126				3580	4.87	230	1530	1320	5.0	3700	7.9
Dec. 16-31.....	2.9					590		302	0	2550	160				4440	6.04	34.8	1840	1590	6.0	4450	7.8
Jan. 1-31, 1965...	1.7					606		290	0	2610	172				4460	6.07	20.5	1880	1640	6.1	4550	7.5
Feb. 1-3.....	2.3					609		288	0	2640	170				4530	6.16	28.1	1900	1660	6.1	4550	7.6
Feb. 4-28.....	15.6					455		296	0	2040	130				3540	4.81	149	1560	1320	5.0	3680	7.7
Mar. 1-31.....	15.6					421		291	0	1870	120				3280	4.46	138	1440	1200	4.8	3550	7.8
Apr. 1-3.....	700					419		234	0	1860	118				3120	4.24	5900	1380	1190	4.9	3560	8.0
Apr. 4-10.....	123					236		256	0	1170	68				2090	2.84	694	1010	800	3.2	2450	8.2
Apr. 11-29.....	38.6					420		266	0	9970	120				3180	4.32	331	1420	1200	4.9	3620	8.1
Apr. 30.....	112					296		252	0	1370	86				2360	3.21	714	1110	903	3.9	2770	8.2
May 1-2.....	63.5					267		250	0	1270	74				2170	2.95	372	1050	845	3.6	2520	7.6
May 3-5.....	75.0					354		270	0	1640	100				2820	3.84	571	1300	1080	4.3	3190	8.0
May 6-12.....	278					93		201	4	536	34				1040	1.41	781	574	402	1.7	1350	8.3
May 13-15.....	109					177		218	0	938	60				1660	2.26	489	855	676	2.6	1990	7.8
May 16-17.....	101					220		259	0	1130	70				2020	2.75	551	1010	798	3.0	2380	7.7

7-1305. ARKANSAS RIVER BELOW JOHN MARTIN RESERVOIR, COLO.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
May 18-20, 1965...	94.3					182		223	0	942	59				1670	2.27	425	850	667	2.7	2040	7.7
May 21-23.....	48.3					342		304	0	1650	101				2860	3.89	373	1360	1110	4.0	3280	7.9
May 24-25.....	672					142		243	0	655	36				1200	1.63	2180	624	425	2.5	1600	7.5
May 26.....	618					189		302	0	1280	32				2200	2.99	3670	1220	972	2.4	2420	7.3
May 27-28.....	569					78		231	0	469	23				928	1.26	1430	540	351	1.5	1240	7.7
May 29-31.....	503					60		189	0	363	22				733	1.00	995	434	279	1.3	1020	7.6
June 1-4.....	288					102		182	0	572	36				1070	1.46	832	574	425	1.9	1400	7.9
June 5-10.....	492					80		178	0	435	26				831	1.13	1100	462	316	1.6	1140	7.7
June 11-17.....	562					61		192	0	330	18				672	.91	1020	394	236	1.3	954	7.9
June 18.....	17					13		184	0	91	4.8				296	.40	13.6	224	73	.4	476	7.9
June 19-30.....	8.2					390		305	0	1770	124				3100	4.22	68.6	1420	1170	4.5	3570	8.0
July 1-6.....	36.6					416		185	0	1830	130				3180	4.32	314	1340	1190	4.9	3590	8.1
July 7.....	474					66		455	0	184	25				665	.90	851	458	85	1.3	1110	8.2
July 8-24.....	1036					56		138	0	293	13				575	.78	1610	314	201	1.4	794	7.8
July 25.....	712					172		178	0	753	48				1400	1.90	2690	623	477	3.0	1690	7.8
July 26-27.....	755					57		123	0	315	15				608	.83	1240	326	225	1.4	860	7.6
July 28.....	521					155		167	0	711	43				1310	1.78	1840	600	463	2.8	1630	7.6
July 29-31.....	1843					57		122	0	314	15				599	.81	2980	324	224	1.4	845	7.5
Aug. 1-21.....	1720					64		123	0	335	15				611	.83	2840	332	231	1.5	855	5.7
Aug. 22.....	1820					181		191	0	817	51				1450	1.97	7130	686	529	3.0	1790	7.7
Aug. 23-31.....	3110					67		128	0	344	16				643	.87	5400	340	235	1.6	891	7.8
Sept. 1-20.....	1232					76		133	0	393	18				765	1.04	2540	378	269	1.7	1000	7.7
Sept. 21-30.....	107					119		153	3	560	28				1040	1.41	300	495	364	2.3	1320	8.4
Weighted average	--					90		146	--	451	23				835	1.14	873	427	307	1.7	1090	7.7
Time-weighted average.....	387					326		237	--	1470	93				2570	--	--	1140	947	3.8	2800	7.7
Tons per day....	--					94		153	--	471	24				--	--	--	--	--	--	--	--

7-1305. ARKANSAS RIVER BELOW JOHN MARTIN RESERVOIR, COLO.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Analyses of additional samples																						
Oct. 3, 1964.....	A25	6.9		289	114	325	8.8	254	0	1520	104	1.1	2.0	0.44	2710	3.69	183	1190	982	4.1	2950	7.8
Oct. 31.....	A28	8.8		329	137	372	6.7	280	0	1780	117	1.1	.9	.45	2990	4.07	226	1380	1150	4.3	3320	7.6
Nov. 28.....	A34	11		317	136	371	6.2	290	0	1730	106	.8	3.9	.40	3090	4.20	284	1350	1110	4.4	3250	7.5
Dec. 23.....	A2.0	23		459	165	570	6.3	302	0	2530	128	1.0	12	1.0	4190	5.70	22.6	1820	1570	5.8	4340	7.7
Feb. 20, 1965.....	A15	13		363	180	443	8.3	332	0	2130	134	1.1	3.5	.52	3650	4.96	148	1640	1370	4.8	3850	7.5
Mar. 20.....	A16	11		353	168	414	6.9	301	0	2010	124	1.0	3.1	.43	3440	4.68	149	1570	1320	4.5	3690	7.7
Apr. 15.....	A46	8.9		325	141	368	6 8	302	0	1760	107	1.1	3.8	.43	3020	4.11	375	1390	1140	4.3	3310	7.9
May 14.....	A105	12		188	104	214	6.4	238	0	1030	60	1.2	.7	.23	1800	2.45	510	895	700	3.1	2220	7.5
June 11.....	A448	11		108	29	65	4.0	163	0	347	22	.8	6.7	.15	695	.95	841	390	256	1.4	948	7.4
July 9.....	A804	9.7		93	16	40	5.5	160	0	231	8.2	.5	2.5	.12	490	.67	1060	298	167	1.0	702	7.3
Aug. 5.....	A3090	8.8		93	21	55	6.4	118	0	323	10	.7	1.3	.08	574	.78	4790	320	223	1.3	826	7.4
Sept. 3.....	A2580	9.0		104	26	63	6.2	123	0	366	22	.8	1.6	.13	670	.91	4670	366	265	1.4	908	7.5

A Discharge at time of sampling.

7-1305. ARKANSAS RIVER BELOW JOHN MARTIN RESERVOIR, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1	4340	3250	3320	4310	4620	3210	3560	2190	1110	3800	847	914
2	4380	3300	3280	4570	4510	3330	3470	2860	1340	3720	836	920
3	4490	3460	3420	4470	4520	3720	3640	3410	1550	3550	849	917
4	4350	3390	3590	4560	3500	3600	2570	3300	1490	3640	854	919
5	4160	3410	3690	4470	3590	3470	2230	2850	1110	3560	808	925
6	4280	3470	3740	4450	3570	3340	2130	1470	1060	3220	810	931
7	4080	3500	4230	4360	3630	3420	2400	1390	1090	1110	812	928
8	3620	3590	4470	4490	3520	3610	2510	1280	1270	807	892	1020
9	3500	3460	3850	4560	3500	3470	2530	1180	1160	751	887	981
10	3910	3470	3750	4570	3450	3690	2770	1240	1100	817	842	990
11	3510	3530	3270	4510	3620	3390	3210	1360	960	791	837	1020
12	3470	3480	3280	4520	3770	3600	3320	1510	1020	771	842	1000
13	3070	3460	3760	4580	3850	3670	3090	1720	896	781	849	994
14	2930	3450	3960	4580	3870	3720	3350	1990	942	749	847	1010
15	3010	3500	4060	4240	3820	3690	3400	2270	945	717	854	1020
16	3050	3440	4320	4590	4010	3610	3490	2680	825	788	856	1050
17	3190	3280	4500	4570	3980	3360	3760	2090	1080	795	865	1050
18	3040	3360	4620	4560	3850	3330	3730	1970	476	799	865	1100
19	2960	3290	4280	4530	3850	3330	3560	1900	3110	802	858	1090
20	2940	3270	4560	4580	3860	3720	3620	2250	3530	846	875	1070
21	3080	3240	4560	4450	3800	3800	3760	2900	3530	837	949	1300
22	3100	3460	4490	4520	3790	3600	3650	3420	3210	822	1790	1260
23	3200	3410	4510	4590	3620	3450	3550	3520	3630	842	872	1280
24	3200	3180	4150	4550	3560	3430	3580	1810	3110	824	892	1260
25	3130	3260	4290	4480	3490	3870	3780	1390	4030	1690	861	1330
26	3100	3180	4480	4590	3760	3640	3830	2420	3650	858	882	1330
27	3080	3240	4490	4590	3640	3400	3850	1410	3790	863	916	1340
28	3170	3290	4570	4510	3510	3560	3780	1060	3740	1630	895	1360
29	3130	3210	4500	4510	--	3410	3580	978	3890	854	905	1340
30	3280	3210	4580	4510	--	3410	2770	978	3710	847	910	1350
31	3490	--	4410	4590	--	3460	--	1090	--	833	905	--
Average	3460	3370	4100	4510	3790	3530	3280	2000	2080	1410	895	1100

7-1305. ARKANSAS RIVER BELOW JOHN MARTIN RESERVOIR, COLO.--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																														Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	59	58	58	58	56	56	56	54	54	57	58	55	51	51	51	54	55	53	47	47	48	48	47	50	47	46	48	48	48	50	52	52
November	49	48	48	47	46	45	48	45	45	47	47	40	41	44	42	42	42	40	36	37	37	34	40	42	40	37	41	34	34	36	--	42
December	40	41	38	36	38	37	41	47	38	48	36	36	36	39	35	38	43	44	41	48	50	46	50	45	47	49	49	49	48	48	49	43
January	49	48	47	50	50	51	50	48	50	47	50	50	49	48	52	48	48	50	50	52	51	51	47	48	51	49	49	49	49	49	49	49
February	50	48	48	38	40	39	40	42	41	40	48	35	38	38	37	40	39	43	42	42	47	40	34	37	39	37	39	39	--	--	--	41
March	40	37	41	40	43	37	35	45	42	43	44	44	46	47	45	43	32	34	37	34	40	38	35	34	37	37	44	42	46	43	46	40
April	46	52	54	52	48	49	54	50	52	60	48	48	50	52	52	53	54	53	53	58	61	61	61	55	54	57	55	53	58	53	--	54
May	61	63	58	58	55	58	58	56	53	53	52	59	64	50	54	55	64	62	60	63	62	66	66	59	54	56	57	64	62	64	64	59
June	67	64	66	64	61	59	64	64	62	63	64	64	64	65	62	67	59	58	65	64	66	58	65	65	62	64	60	66	66	65	--	63
July	62	64	65	64	65	65	65	67	65	70	72	73	72	65	68	74	75	74	75	74	75	75	75	74	73	74	76	69	74	74	72	70
August	74	74	75	75	72	72	72	74	74	72	71	72	72	73	73	72	73	72	72	74	74	68	71	72	74	70	71	72	73	73	71	72
September	71	72	72	72	70	70	71	69	70	69	69	69	68	68	70	65	64	66	65	64	60	59	59	60	60	59	59	61	58	59	--	66

7-1330. ARKANSAS RIVER AT LAMAR, COLO.

LOCATION.--At gaging station, 450 feet upstream from bridge on U.S. Highways 50 and 287, and 1.2 miles north of city hall in Lamar, Powers County.
DRAINAGE AREA.--19,780 square miles, of which 950 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: November 1963 to September 1965.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 3, 1964.....	1.2	13		357	199	638	8.8	248	0	2600	157	1.2	2.9	0.86	4300	5.85	13.9	1710	1510	6.7	4510	7.7
Oct. 31.....	5.7	9.3		345	175	483	7.5	285	0	2180	126	1.0	2.7	.60	3660	4.98	56.3	1580	1350	5.3	3880	7.6
Nov. 28.....	.5	11		359	188	584	8.2	272	0	2420	148	1.1	4.6	.62	4120	5.60	5.56	1670	1450	6.2	4260	7.6
Dec. 23.....	.5	11		355	192	617	8.2	264	0	2490	151	1.2	5.8	.83	4140	5.63	5.59	1680	1460	6.6	4360	7.6
Jan. 22, 1965.....	.6	14		379	209	638	8.8	290	0	2660	162	1.2	6.9	.86	4470	6.08	7.24	1800	1560	6.5	4650	7.6
Feb. 20.....	.5	13		389	209	638	8.8	302	0	2680	162	1.2	6.2	.81	4460	6.07	6.02	1830	1580	6.5	4620	7.6
Mar. 19.....	1.4	15		377	225	651	9.2	292	0	2710	165	1.4	10	.79	4610	6.27	17.4	1860	1620	6.6	4720	7.8
Apr. 15.....	19	11		349	168	476	7.6	272	0	2160	127	1.1	3.8	.60	3600	4.90	185	1560	1340	5.2	3870	7.7
May 14.....	38	13		220	114	243	6.6	224	0	1250	75	1.1	6.4	.36	2150	2.92	221	1020	836	3.3	2500	7.6
June 10.....	16	11		172	68	177	6.1	176	0	839	54	.9	5.5	.26	1490	2.03	64.4	710	566	2.9	1870	7.5
July 9.....	293	13		108	22	57	5.9	185	0	299	12	.5	.7	.15	617	.84	488	360	208	1.3	856	7.3
Aug. 5.....	2500	9.2		99	25	59	6.4	134	0	342	11	.7	1.0	.08	623	.85	4210	352	242	1.4	867	7.4
Sept. 3.....	2260	8.9		102	31	68	5.8	129	0	392	18	.7	1.5	.15	718	.98	4380	380	274	1.5	964	7.5

7-1345. ARKANSAS RIVER NEAR GRANADA, COLO.

LOCATION.--At bridge on State Highway 51, 1.5 miles downstream from headgate of Buffalo Canal and 2.5 miles north of Granada, Prowers County.
DRAINAGE AREA.--23,707 square miles.
RECORDS AVAILABLE.--November 1963 to September 1965.

Chemical analyses, in parts per million, November 1963 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Nov. 27, 1963		16		377	185	548	9.4	301	0	2420	145	1.0	2.5	--	A3850	5.24		1700	1450	5.8	4330	7.4
Dec. 28		16		381	182	535	8.7	324	0	2280	140	1.0	7.2	--	A3710	5.05		1700	1430	5.6	4250	7.3
Jan. 23, 1964		17		325	182	508	9.1	195	0	2280	132	.8	6.8	0.51	3760	5.11		1560	1400	5.6	4030	8.0
Feb. 18		18		369	187	533	9.1	315	0	2300	129	1.0	8.1	.54	3910	5.32		1690	1430	5.6	4150	8.0
Mar. 18		13		379	184	606	9.8	296	0	2460	157	.9	1.9	.67	4200	5.71		1700	1460	6.4	4440	7.3
Apr. 14		15		369	197	533	9.3	315	0	2350	131	1.0	.8	.57	3940	5.36		1730	1470	5.6	4140	7.8
May 12		13		375	181	626	10	279	0	2450	156	1.0	4.9	.63	4210	5.73		1680	1450	6.6	4370	7.7
June 10		12		353	180	533	9.6	268	0	2330	134	.8	1.7	.05	3900	5.30		1620	1400	5.8	4130	7.8
July 8		16		377	180	545	9.5	302	0	2320	133	.8	6.4	.46	3960	5.39		1680	1430	5.8	4200	8.0
Aug. 6		16		377	190	561	10	296	0	2440	138	1.2	4.4	.41	4080	5.55		1720	1480	5.9	4300	8.0
Sept. 1		16		361	192	553	10	290	0	2410	134	1.2	5.9	.69	4040	5.49		1690	1450	5.9	4240	7.8
Oct. 3		20		387	185	577	10	320	0	2460	138	1.2	6.7	.64	4190	5.70		1720	1460	6.0	4270	7.6
Oct. 30		16		369	197	591	10	282	0	2480	141	1.3	4.9	.69	4220	5.74		1730	1500	6.2	4310	7.6
Nov. 27		15		375	195	591	10	312	0	2460	143	1.3	5.9	.65	4230	5.75		1740	1480	6.2	4270	7.8
Dec. 22		13		357	182	551	9.8	258	0	2360	140	1.0	5.4	.64	4010	5.45		1640	1430	5.9	4150	7.6
Jan. 21, 1965		14		371	191	568	9.4	276	0	2420	144	1.1	7.7	.63	4100	5.58		1710	1480	6.0	4220	7.6
Feb. 19		14		377	193	591	10	314	0	2450	145	1.1	4.7	.62	4200	5.71		1740	1480	6.2	4290	7.6
Mar. 19		15		377	192	580	10	314	0	2430	145	1.1	7.1	.60	4200	5.71		1730	1470	6.1	4310	7.7
May 14		15		369	219	588	9.0	312	0	2510	148	1.1	6.1	.66	4190	5.70		1820	1560	6.0	4460	7.9
June 10		14		335	154	423	8.9	269	0	1980	115	1.1	4.5	.48	3320	4.52		1470	1250	4.8	3750	7.7
July 9		20		164	39	111	6.6	243	0	564	30	.6	.6	.16	1070	1.46		570	371	2.0	1400	7.0
Aug. 5		9.5		101	27	68	6.4	134	0	369	12	.7	2.2	.09	661	.90		364	254	1.6	926	7.5
Sept. 3		10		115	34	88	6.4	140	0	457	28	.9	1.7	.14	829	1.13		424	309	1.9	1090	7.5

A Calculated from determined constituents.

7-1375. ARKANSAS RIVER NEAR COOLIDGE, KANS.

LOCATION.--At gaging station, 1,560 feet upstream from highway bridge, 1 mile south of Coolidge, Hamilton County, and 1.5 miles downstream from Colorado-Kansas State line.
DRAINAGE AREA.--25,410 square miles, of which 1,708 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: November 1963 to September 1965.
Water temperatures: October 1964 to September 1965.
EXTREMES, 1964-65.--Specific conductance: Maximum daily, 4,970 micromhos Dec. 17; minimum daily, 454 micromhos June 18.
Water temperatures: Maximum, 84°F May 22, July 22; minimum, freezing point on many days during November to March.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 3, 1964.....	2.5	12		401	165	609	9.4	200	0	2500	207	0.6	0.2	0.48	4150	5.64	28.0	1680	1520	6.5	4420	7.6
Oct. 30.....	2.5	10		409	170	600	9.7	232	0	2530	202	.7	.5	.49	4220	5.74	28.5	1720	1530	6.3	4500	7.7
Nov. 27.....	19	14		387	179	600	10	230	0	2480	176	.8	4.8	.61	4130	5.62	212	1700	1510	6.3	4370	7.6
Dec. 22.....	19	14		393	164	584	10	222	0	2390	180	.7	4.6	.59	4070	5.54	209	1660	1480	6.2	4260	7.6
Jan. 21, 1965.....	18	12		395	173	600	9.7	222	0	2480	186	.7	3.8	.60	4120	5.60	200	1700	1520	6.3	4380	7.7
Feb. 19.....	28	14		409	173	600	10	264	0	2460	176	.8	3.7	.60	4150	5.64	314	1730	1510	6.3	4390	7.6
Mar. 19.....	22	14		423	173	620	10	268	0	2500	192	.8	6.0	.59	4310	5.86	256	1760	1540	6.4	4430	7.8
Apr. 15.....	6.5	6.3		405	175	600	9.4	218	0	2480	207	.6	1.0	.52	4170	5.67	73.2	1730	1550	6.3	4500	8.0
May 14.....	4.0	8.9		425	180	588	9.0	240	0	2560	214	.7	1.0	.51	4270	5.81	46.1	1800	1600	6.0	4630	7.8
June 10.....	A39	14		365	148	453	11	263	0	2070	148	.9	4.1	.46	3500	4.76	369	1520	1300	5.1	3890	7.7
July 9.....	560	23		293	88	258	8.8	323	0	1230	83	.6	1.0	.30	2270	3.09	3430	1090	825	3.4	2680	7.0
Aug. 5.....	2650	9.6		115	34	80	6.7	148	0	432	16	.7	.2	.12	773	1.05	5530	428	307	1.7	1030	7.6
Sept. 3.....	3220	9.9		120	33	92	6.4	140	0	477	29	.7	2.0	.15	858	1.17	7460	436	321	1.9	1130	7.6
Sept. 29.....	248	13		309	148	388	7.9	257	0	1860	120	.9	5.0	.47	3150	4.28	2110	1380	1170	4.5	3680	7.8

A Daily mean discharge.

7-1375. ARKANSAS RIVER NEAR COOLIDGE, KANS.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	4540	4430	4340	4370	3710	4190	4560	4650	4150	3810	1090	1140
2.....	4610	4380	3780	4450	4450	4600	4510	4690	4160	3930	1060	1170
3.....	4490	4480	3630	4490	4430	4240	3850	4650	4120	4010	1090	1210
4.....	4490	4430	4330	4400	4390	4660	3640	4690	4250	1040	1050	1200
5.....	4450	4500	4310	4380	4390	3850	3910	4750	4210	1420	1050	1230
6.....	4490	4410	4410	4350	4380	4560	4300	4780	3310	3070	1010	1220
7.....	4550	4410	4520	4370	4420	4600	4420	4700	3160	3560	1050	1220
8.....	4460	4380	4530	4180	4380	4520	4380	4680	2980	3860	1030	1200
9.....	4480	4420	4450	4390	4370	4530	4420	4720	3790	2650	1150	1850
10.....	4510	4430	4380	4390	4380	4510	4480	4710	4120	1530	1590	1760
11.....	4450	4550	4420	4380	3820	4500	4530	4710	3800	1130	1470	2320
12.....	4510	4460	4420	4340	4910	4480	4470	4570	3530	1120	1420	1780
13.....	4480	4420	4220	4480	4770	4420	4480	4460	3770	1160	1480	2330
14.....	4550	4430	4220	4400	4680	4450	4460	4680	3450	1130	1590	2500
15.....	4470	4430	4400	4390	4500	4480	4470	4710	2660	1840	1590	2580
16.....	4440	4350	4360	4380	4450	4470	4490	4710	1790	2690	1560	2800
17.....	4500	4060	4970	4410	4500	3500	4480	4720	1020	1640	1610	2850
18.....	4400	4380	4690	4410	4380	4500	4480	4790	454	1620	1600	2650
19.....	4480	4320	4390	4320	4300	4370	4510	4690	518	1680	1610	2610
20.....	4480	4390	4370	4430	4420	4230	4500	4770	--	1700	801	2260
21.....	4470	4390	4410	4400	4390	4490	4510	4710	1870	1680	637	2080
22.....	4460	4400	4400	4420	3300	4290	4490	4730	--	1780	695	2450
23.....	4440	4370	4380	4420	3400	3150	4480	4690	2300	1740	1080	3210
24.....	4470	4360	4360	4400	4680	4170	4530	2390	2140	1740	752	3320
25.....	4440	4360	4280	4400	4570	4600	4500	1010	1260	1790	958	3370
26.....	4420	4390	4390	4490	4400	4570	4440	1470	1130	2930	1040	3160
27.....	4400	3960	4430	4530	4400	4410	4500	1490	1770	1060	1070	3390
28.....	4430	4440	4400	3600	4450	4440	4470	2870	2210	464	--	3500
29.....	4420	3800	4420	4570	--	4480	4490	2420	3150	1600	1180	3580
30.....	4420	4500	4410	4220	--	4490	4510	3650	3800	1330	1100	3570
31.....	4450	--	4430	4330	--	4540	--	3570	--	1120	1190	--
Average	4470	4370	4370	4370	4340	4360	4410	4090	2820	1990	1190	2320

7-1375. ARKANSAS RIVER NEAR COOLIDGE, KANS.--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																														Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	78	63	54	64	48	69	60	60	62	64	57	61	44	61	44	62	46	43	63	41	65	64	42	47	54	41	59	48	41	46	46	55
November	64	43	55	42	46	48	43	43	52	44	40	36	48	43	44	41	39	38	35	33	36	38	35	50	36	37	34	33	34	32	--	41
December	41	35	33	32	36	34	32	32	32	33	32	32	34	33	45	32	32	32	35	34	34	33	38	47	34	32	32	34	38	35	37	35
January	41	32	32	33	33	52	45	36	33	46	34	36	32	--	51	47	36	36	34	33	35	34	33	48	35	32	32	32	32	34	35	37
February	34	32	33	33	54	37	36	35	35	34	33	34	40	33	32	32	32	55	34	38	48	56	33	32	32	32	34	43	--	--	--	37
March	33	32	32	32	32	44	32	33	38	35	37	40	42	41	39	46	38	33	44	38	33	40	34	32	32	32	39	47	41	36	43	37
April	43	52	66	49	47	44	49	63	47	57	44	68	43	53	45	45	64	44	46	52	54	52	56	47	48	53	46	58	47	54	--	51
May	53	79	80	72	63	77	62	58	43	62	62	64	59	78	55	56	58	57	58	69	69	84	65	62	66	69	57	80	72	73	58	65
June	64	75	68	58	57	65	60	61	68	61	58	72	64	63	65	66	63	68	--	--	75	--	78	--	64	72	66	67	68	78	--	66
July	68	76	71	67	70	79	72	69	69	69	74	79	74	74	73	71	81	82	75	82	80	84	82	74	70	73	81	69	71	81	72	75
August	77	71	73	75	75	75	77	75	73	73	83	74	72	78	76	72	78	72	71	71	72	68	69	69	73	73	69	--	74	72	70	73
September	67	67	70	69	66	64	69	68	74	64	64	65	65	63	74	58	50	52	60	53	61	53	58	57	57	62	53	--	63	64	--	62

8-2492. RIO GRANDE ABOVE CULEBRA CREEK, NEAR LOBATOS, COLO.

LOCATION.--Half a mile southeast of La Sauses, 7 miles upstream from Culebra Creek, and 15 miles upstream from gaging station near Lobatos, Conejos County.
DRAINAGE AREA.--7,700 square miles, approximately, upstream from gaging station (includes 2,940 square miles in closed basin in northern part of San Luis Valley, Colo.).
RECORDS AVAILABLE.--Chemical analyses: October 1946 to September 1965.
Water temperatures: July 1964 to September 1965.
EXTREMES, 1964-65.--Dissolved solids: Maximum, 438 ppm Aug. 12-31; minimum, 99 ppm Nov. 12-16.
Hardness: Maximum, 203 ppm Aug. 12-31; minimum, 46 ppm Nov. 12-16.
Specific conductance: Maximum daily, 703 micromhos Aug. 25; minimum daily, 131 micromhos Nov. 12.
Water temperatures: Maximum, 83°F July 18; minimum, freezing point on many days during winter months.
EXTREMES, 1946-65.--Dissolved solids: Maximum, 805 ppm Sept. 21, 1959; minimum, 99 ppm Nov. 12-16, 1964.
Hardness: Maximum, 346 ppm June 9-14, 1953; minimum, 44 ppm Nov. 10-12, 14, 1960.
Specific conductance: Maximum daily, 1,110 micromhos Sept. 21, 1959; minimum daily, 122 micromhos June 1, 1949.
Water temperatures (1964-65): Maximum, 86°F July 28, 1964; minimum, freezing point on many days during winter months each year.
REMARKS.--Values reported for sodium (Na) are determined by analysis and do not include potassium (K). Culebra Creek which enters the Rio Grande between the sampling point and the gaging station is usually dry at its mouth. Inflow from this and other sources between sampling point and gaging station occurs only after heavy local rainfall.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 1-7, 1964...	9.7	--	--	41	9.6	58	--	214	0	--	--	--	--	--	343	0.47	8.98	142	0	2.1	519	7.9
Oct. 8-31.....	30.8	--	--	38	7.1	46	--	196	0	--	--	--	--	--	294	.40	24.5	124	0	1.8	443	7.7
Nov. 1-9.....	45.2	--	--	44	9.2	47	--	180	0	--	--	--	--	--	333	.45	40.6	148	0	1.7	499	7.5
Nov. 10-11.....	266	--	--	15	3.5	12	--	70	0	--	--	--	--	--	122	.17	87.6	52	0	.7	167	7.0
Nov. 12-16.....	467	21	0.07	13	3.3	8.2	3.0	56	0	15	2.4	0.1	1.1	0.04	99	.13	125	46	0	.5	135	7.0
Nov. 17.....	298	--	--	22	3.9	15	--	80	0	--	--	--	--	--	156	.21	126	71	5	.8	213	7.1
Nov. 18-20.....	124	--	--	33	6.0	26	--	122	0	--	--	--	--	--	234	.32	78.3	107	7	1.1	341	7.3
Nov. 21-30.....	83.8	--	--	44	9.0	41	--	178	0	--	--	--	--	--	316	.43	71.5	147	1	1.5	460	7.5
Dec. 1-3.....	78.3	--	--	43	9.4	39	--	180	0	--	--	--	--	--	312	.42	66.0	146	0	1.4	451	7.7
Dec. 4-7.....	72.5	--	--	40	6.3	29	--	144	0	--	--	--	--	--	268	.36	52.5	126	8	1.1	385	7.7
Dec. 8-19.....	70.8	--	--	42	7.5	32	--	156	0	--	--	--	--	--	290	.39	55.4	136	8	1.2	417	7.3
Dec. 20-23.....	78.8	--	--	33	6.7	22	--	122	0	--	--	--	--	--	228	.31	48.5	110	10	.9	329	7.4
Dec. 24.....	90.0	--	--	38	7.1	31	--	156	0	--	--	--	--	--	270	.37	65.6	124	0	1.2	382	7.4
Dec. 25-31.....	101	--	--	31	5.0	22	--	121	0	--	--	--	--	--	216	.29	58.9	98	0	1.0	302	7.2
Jan. 1-6, 1965...	132	--	--	30	5.8	21	--	119	0	--	--	--	--	--	206	.28	73.4	99	1	.9	287	7.3
Jan. 7.....	150	--	--	17	5.2	15	--	70	0	--	--	--	--	--	139	.19	56.3	64	7	.8	182	7.0
Jan. 8-31.....	197	--	--	27	4.5	19	--	106	0	--	--	--	--	--	182	.25	96.8	86	0	.9	257	7.3
Feb. 1-28.....	222	30	.02	27	4.5	17	4.9	102	0	33	5.3	.3	1.9	.03	182	.25	109	86	2	.8	255	7.2

8-2492. RIO GRANDE ABOVE CULEBRA CREEK, NEAR LOBATOS, COLO.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Mar. 1-12.....	268	--	--	28	5.1	17	--	104	0	--	--	--	--	--	186	.25	135	91	6	.8	260	7.2
Mar. 13-31.....	411	--	--	32	6.8	22	--	106	0	--	--	--	--	--	221	.30	245	108	21	.9	320	7.1
Apr. 1-11.....	331	--	--	44	7.5	27	--	130	0	--	--	--	--	--	277	.38	248	141	34	1.0	419	7.4
Apr. 12-19.....	156	30	.06	55	11	41	8.6	168	0	117	16	.6	1.4	.05	368	.50	155	183	45	1.3	550	7.3
Apr. 20-30.....	498	--	--	31	6.7	27	--	148	0	--	--	--	--	--	230	.31	309	105	0	1.1	329	7.3
May 1-2.....	476	--	--	46	8.0	28	--	100	0	--	--	--	--	--	280	.38	360	148	66	1.0	414	7.3
May 3-9.....	1210	--	--	24	4.6	14	--	69	0	--	--	--	--	--	168	.23	549	79	22	.7	234	6.9
May 10-19.....	945	--	--	33	7.7	24	--	113	0	--	--	--	--	--	227	.31	579	114	21	1.0	328	7.1
May 20-25.....	2050	--	--	22	4.1	16	--	76	0	--	--	--	--	--	172	.23	952	72	10	.8	222	7.1
May 26-31.....	1150	--	--	33	6.2	23	--	95	0	--	--	--	--	--	228	.31	708	108	30	1.0	333	7.1
June 1-11.....	1450	--	--	27	5.2	22	--	120	0	--	--	--	--	--	204	.28	799	89	0	1.0	283	7.3
June 12-16.....	2070	--	--	31	7.2	29	--	94	0	--	--	--	--	--	246	.33	1370	107	30	1.2	356	7.0
June 17-27, 1965.	3230	--	--	23	5.2	20	--	78	0	--	--	--	--	--	184	0.25	1600	79	15	1.0	259	7.1
June 28-30.....	2120	--	--	34	7.1	26	--	104	0	--	--	--	--	--	240	.33	1370	114	29	1.1	352	7.2
July 1-3.....	1390	--	--	35	7.2	27	--	114	0	--	--	--	--	--	256	.35	961	117	23	1.1	356	7.4
July 4-16.....	1710	--	--	28	5.8	19	--	121	0	--	--	--	--	--	178	.24	822	94	0	.9	265	7.6
July 17-22.....	869	25	0.03	39	7.9	29	5.5	124	0	80	8.1	0.5	1.0	.08	264	.36	619	130	28	1.1	392	7.3
July 23-25.....	447	--	--	52	11	42	--	155	0	--	--	--	--	--	353	.48	426	173	46	1.4	523	7.3
July 26-31.....	812	--	--	37	7.4	29	--	126	0	--	--	--	--	--	262	.36	574	123	20	1.1	387	7.2
Aug. 1-8.....	1230	--	--	29	6.0	21	--	126	0	--	--	--	--	--	194	.26	644	97	0	.9	282	7.4
Aug. 9-11.....	612	--	--	39	9.4	35	--	138	0	--	--	--	--	--	289	.39	478	136	23	1.3	427	7.1
Aug. 12-31.....	216	--	--	61	12	57	--	189	0	--	--	--	--	--	438	.60	255	203	48	1.7	644	7.4
Sept. 1-20.....	151	--	--	53	11	42	--	162	0	--	--	--	--	--	366	.50	149	178	45	1.4	543	7.4
Sept. 21-30.....	661	--	--	22	3.2	12	--	71	0	--	--	--	--	--	142	.19	253	68	10	.6	202	6.9
Weighted average	--	--	--	30	6.1	23	--	106	--	--	--	--	--	--	213	0.29	332	99	14	0.9	304	7.1
Time-weighted average.....	578	--	--	35	6.9	29	--	130	--	--	--	--	--	--	249	--	--	117	14	1.1	362	7.2
Tons per day...	--	--	--	47	9.5	36	--	166	--	--	--	--	--	--	--	--	--	--	--	--	--	--

8-2492. RIO GRANDE ABOVE CULEBRA CREEK, NEAR LOBATOS, COLO.--Continued

Specific conductance (micromhos at 25°C) of water, water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1	519	446	472	272	246	267	356	--	300	355	300	659
2	520	435	424	316	240	284	358	414	268	357	270	560
3	506	--	--	--	242	261	398	279	272	356	256	521
4	514	562	409	288	247	265	389	204	294	269	249	514
5	531	505	355	276	250	250	419	194	253	259	--	499
6	515	512	378	276	245	277	429	199	274	232	263	498
7	511	502	403	182	245	257	449	241	316	265	290	526
8	459	567	419	285	278	260	434	258	302	269	330	539
9	456	523	429	248	255	254	471	266	279	291	387	541
10	479	179	441	257	250	246	486	289	278	287	409	538
11	494	155	429	248	280	252	461	324	289	--	476	521
12	507	131	418	267	261	255	558	354	358	272	530	470
13	480	132	409	265	261	--	557	324	391	252	578	521
14	442	135	--	278	--	--	555	340	404	242	620	551
15	433	143	415	254	263	314	550	312	300	261	666	556
16	421	134	407	258	--	284	536	315	339	288	585	556
17	418	213	400	260	263	303	524	353	282	343	621	544
18	415	303	--	246	289	293	522	385	267	367	643	--
19	409	341	361	251	245	314	626	307	279	394	--	562
20	419	376	342	232	240	289	467	252	253	396	691	576
21	424	414	331	247	245	310	372	215	254	407	645	259
22	429	508	315	245	247	321	328	211	239	444	621	225
23	436	478	325	240	255	327	270	198	248	513	612	202
24	447	498	382	249	269	333	318	214	260	579	674	198
25	445	527	330	235	250	330	257	257	257	478	703	197
26	--	434	302	258	247	353	312	284	253	413	646	195
27	442	438	292	246	--	353	281	312	261	383	620	190
28	439	430	285	243	252	346	302	348	307	361	650	181
29	427	423	308	220	--	328	351	360	358	389	662	172
30	429	452	307	--	--	325	371	376	381	386	668	164
31	435	--	306	221	--	330	--	336	--	387	648	--
Average	460	375	371	253	254	295	423	290	293	349	528	421

8-2492. RIO GRANDE ABOVE CULEBRA CREEK, NEAR LOBATOS, COLO.--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																													Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	69	66	65	44	62	56	64	66	61	58	64	46	50	63	60	59	54	54	57	50	68	49	48	54	46	--	53	58	54	56	56	57
November	55	51	--	46	49	50	48	45	44	45	40	39	30	39	40	45	39	41	40	40	36	35	34	34	34	34	37	36	36	35	--	41
December	32	33	--	32	32	32	32	32	32	32	32	32	32	--	32	--	32	--	32	32	32	32	32	32	32	32	32	32	32	33	32	32
January	32	32	--	32	32	32	35	35	35	34	34	35	34	32	35	35	35	34	35	34	34	33	34	34	35	33	34	37	34	--	37	34
February	34	34	37	40	42	45	40	38	35	33	32	32	33	--	32	--	32	34	35	35	43	40	37	38	38	38	--	40	--	--	--	37
March	33	35	32	32	33	39	37	40	38	42	40	45	--	--	38	50	40	42	38	45	45	45	45	40	36	40	45	47	46	55	56	41
April	50	50	45	52	40	47	45	52	52	40	45	51	50	48	47	52	52	46	43	50	48	54	50	55	47	44	40	50	55	--	--	48
May	--	--	55	52	50	55	50	45	58	48	55	58	55	57	60	68	70	65	68	60	63	64	65	63	55	56	57	60	65	65	65	59
June	60	60	60	58	60	63	66	68	60	60	61	65	73	68	63	66	66	62	65	69	68	69	69	68	64	65	66	67	70	72	--	65
July	65	73	72	75	75	64	70	73	75	75	--	73	70	75	73	73	73	83	73	75	73	73	73	74	75	73	77	70	76	72	66	73
August	67	67	75	66	--	70	74	75	70	70	73	78	73	76	78	75	70	70	--	63	66	68	70	66	69	75	73	66	68	59	68	70
September	66	72	66	65	65	70	64	66	63	65	60	58	65	72	63	63	57	--	55	55	55	53	58	57	55	59	53	57	48	52	--	61

PART 9. COLORADO RIVER BASIN

COLORADO RIVER MAIN STEM

9-345. COLORADO RIVER AT HOT SULPHUR SPRINGS, COLO.

LOCATION.--At bridge at Hot Sulphur Springs, Grand County, 1 mile downstream from gaging station and 3.5 miles upstream from Beaver Creek.
DRAINAGE AREA (revised).--825 square miles upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: April 1947 to September 1965.
Water temperatures: April 1949 to September 1965.
EXTREMES, 1964-65.--Dissolved solids: Maximum, 124 ppm Apr. 17-18; minimum, 60 ppm Mar. 2.
Hardness: Maximum, 70 ppm Apr. 17-18; minimum, 40 ppm June 1-10.
Specific conductance: Maximum daily, 197 micromhos Apr. 23; minimum daily, 79 micromhos June 9, 10.
Water temperatures: Maximum, 70°F Aug. 12; minimum, freezing point on many days during November to April.
EXTREMES, 1947-65.--Dissolved solids (1947-50, 1952-65): Maximum, 132 ppm July 16, 1962; minimum, 38 ppm June 21-30, 1947.
Hardness (1947-50, 1952-65): Maximum, 82 ppm May 17, 18, 1963; minimum, 20 ppm June 21-30, 1947.
Specific conductance: Maximum daily, 210 micromhos Apr. 13, 1958; minimum daily, 48 micromhos June 27, 1947.
Water temperatures (1949-65): Maximum, 75°F Aug. 8, 1957; minimum, freezing point on many days during winter months.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). Additional samples were collected for more comprehensive definition of water quality at this station.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 1-31, 1984...	52.8					8.5		91	0	5.8	1.4				84	0.11	12.0	64	0	0.5	154	7.8
Nov. 1-30.....	58.1					12		98	0	6.0	1.8				85	.12	13.3	62	0	.7	152	7.7
Dec. 1-31.....	56.1					11		94	0	8.0	2.5				89	.12	13.5	65	0	.6	172	7.7
Jan. 1-31, 1965...	60.8					11		91	0	7.4	2.5				95	.13	15.6	61	0	.6	166	7.8
Feb. 1-6.....	60.0					13		92	0	10	2.7				118	.16	19.1	62	0	.7	162	7.8
Feb. 7-10.....	63.0					7.2		67	0	6.8	2.5				90	.12	15.3	50	0	.4	119	7.9
Feb. 11-28.....	62.5					13		89	0	10	3.8				113	.15	19.1	60	0	.7	165	7.9
Mar. 1.....	60					15		92	0	14	2.4				100	.14	16.2	60	0	.8	161	7.7
Mar. 2.....	60					4.1		56	0	2.5	1.7				60	.08	9.72	42	0	.3	91	7.4
Mar. 3-19.....	60.0					11		88	0	7.0	3.1				106	.14	17.2	60	0	.6	163	7.3
Mar. 20.....	63					2.3		64	0	1.2	2.4				64	.09	10.9	52	0	.1	116	7.7
Mar. 21-31.....	63.5					11		86	0	8.6	3.3				102	.14	17.5	60	0	.6	166	7.4
Apr. 1-14.....	96.8					9.9		84	0	11	3.7				119	.16	31.1	64	0	.5	168	7.6
Apr. 15-16.....	172					6.2		58	0	9.5	2.8				94	.13	43.7	48	0	.4	116	7.3
Apr. 17-18.....	238					9.5		88	0	12	4.3				124	.17	79.7	70	0	.5	177	7.0
Apr. 19-22.....	452					4.7		63	0	8.0	2.3				91	.12	111	53	1	.3	125	7.4
Apr. 23-27.....	458					9.3		85	0	13	4.3				120	.16	148	69	0	.5	174	7.4
Apr. 28-30.....	491					4.5		65	0	6.4	2.8				101	.14	134	54	1	.3	128	7.2
May 1-31.....	698					4.2		52	0	4.9	2.4				82	.11	155	42	0	.3	99	7.3
June 1-10.....	621					2.5		47	0	4.1	1.9				71	.10	119	40	1	.2	89	7.4

9-345. COLORADO RIVER AT HOT SULPHUR SPRINGS, COLO.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
June 11-13, 1965..	1047					5.0		71	0	5.4	2.2				94	0.13	266	56	0	0.3	126	7.3
June 14-26.....	1131					6.1		90	0	5.6	1.9				110	.15	336	69	0	.3	158	7.4
June 27-30.... ...	722					3.9		54	0	3.7	2.4				79	.11	154	43	0	.3	99	7.1
July 1-17.....	311					4.8		89	0	3.7	1.9				97	.13	81.5	69	0	.3	157	7.8
July 18-20.....	291					3.9		58	0	3.7	1.5				64	.09	50.3	45	0	.3	103	7.7
July 21-31.....	671					4.7		82	0	3.5	1.7				88	.12	159	63	0	.3	144	7.7
Aug. 1-6.....	577					7.4		72	0	8.8	1.3				85	.12	132	54	0	.4	129	7.7
Aug. 7-24.... ...	211					7.5		75	0	7.8	1.2				87	.12	49.6	55	0	.4	136	7.5
Sept. 1-30	97.8					7.2		79	0	8.8	1.2				96	.13	25.4	60	0	.4	144	7.4
Weighted average	--					5.9		72	--	5.9	2.1				92	0.13	62.8	56	0	0.3	131	7.4
Time-weighted average	A252					8.5		82	--	7.0	2.2				94	--	--	59	0	0.4	147	7.5
Tons per day ...	--					4.0		49	--	4.0	1.5				--	--	--	--	--	--	--	--
Analyses of additional samples																						
Oct. 1, 1964...	B49	11	0.00	21	2.9	7.0	1.3	93	0	6.0	2.3	0.3	0.0	0.02	95	0.13	12.6	64	0	0.4	149	7.6
Aug. 15, 1965....	B173	11	.23	20	2.4	5.0	.8	76	0	7.8	1.4	.3	.1	.05	88	.12	41.1	60	0	.3	130	7.5

A Mean discharge based on 365 days; mean discharge for 358 days of chemical analyses, 253 cfs.
B Discharge at time of sampling.

COLORADO RIVER MAIN STEM--Continued

9-345. COLORADO RIVER AT HOT SULPHUR SPRINGS, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1.....	157	148	181	175	163	161	169	101	89	127	129	--
2.....	153	145	183	170	163	91	168	101	91	160	135	--
3.....	166	148	151	164	162	162	170	101	90	159	136	--
4.....	163	149	176	163	165	162	169	88	90	157	128	--
5.....	161	148	171	166	165	165	168	98	95	158	103	--
6.....	159	148	168	158	151	165	170	98	90	165	99	149
7.....	161	145	153	154	81	165	170	97	90	155	136	145
8.....	160	145	152	156	142	165	169	98	91	159	137	142
9.....	149	146	180	151	138	165	169	98	79	159	137	146
10.....	152	147	180	161	110	165	168	98	79	148	127	132
11.....	148	151	186	161	162	160	168	97	136	165	135	153
12.....	149	150	185	160	166	160	158	98	139	140	131	123
13.....	149	141	175	159	167	160	158	101	102	159	134	149
14.....	146	145	176	161	163	160	151	98	141	159	136	150
15.....	147	143	175	166	168	158	117	98	143	172	137	148
16.....	147	147	147	150	162	160	116	97	156	142	138	146
17.....	151	151	172	158	161	160	170	97	156	158	128	148
18.....	146	155	181	141	161	160	184	102	187	104	133	147
19.....	149	152	153	168	162	161	116	97	158	102	127	147
20.....	151	152	149	165	162	116	148	97	146	103	127	131
21.....	153	153	174	162	162	160	116	97	145	155	127	152
22.....	151	150	170	161	161	164	115	120	152	160	130	152
23.....	151	140	183	160	162	163	197	97	160	161	127	153
24.....	149	175	146	162	162	161	171	97	159	130	127	128
25.....	151	143	145	162	163	166	168	100	161	130	--	145
26.....	151	142	175	163	165	167	154	93	165	130	--	148
27.....	148	142	181	161	163	169	171	89	82	130	--	128
28.....	141	178	177	163	165	167	133	98	107	138	--	128
29.....	141	159	168	162	--	166	132	106	91	159	--	128
30.....	147	161	169	162	--	168	118	101	114	140	--	128
31.....	147	--	175	164	--	167	--	94	--	139	--	--
Average	151	149	169	160	156	159	155	98	122	145	129	141

9-345. COLORADO RIVER AT HOT SULPHUR SPRINGS, COLO.--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																													Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	57	57	59	60	59	54	54	54	50	51	50	51	51	52	51	51	51	51	48	47	47	45	40	47	47	47	45	42	42	45	42	50
November	41	42	39	39	39	38	39	39	39	34	32	32	35	33	32	32	32	35	32	32	33	33	33	33	33	33	32	32	32	32	--	35
December	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
January	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	--	--	--	32
March	35	34	33	33	33	34	33	35	34	34	35	35	38	35	38	36	38	32	32	32	32	32	32	32	32	32	32	32	32	32	32	34
April	32	32	33	35	32	32	32	32	32	32	33	33	33	35	35	33	32	32	38	33	38	40	43	44	43	48	43	43	43	45	--	36
May	48	50	52	52	52	53	53	53	53	55	50	52	55	56	56	56	55	56	56	58	58	48	42	48	41	41	50	55	58	58	58	53
June	53	53	55	53	53	55	53	55	57	58	58	59	59	58	58	60	62	62	58	63	62	62	58	57	58	57	58	57	57	56	--	57
July	54	57	62	63	65	68	67	68	64	68	68	68	67	68	68	68	67	68	68	68	68	68	68	68	67	68	68	67	68	68	68	66
August	67	65	67	62	62	68	68	67	65	67	65	70	69	68	65	68	58	68	67	65	62	58	62	58	--	--	--	--	--	--	--	--
September	--	--	--	--	--	63	65	63	65	63	65	63	60	60	60	54	54	49	49	52	48	48	48	48	50	48	46	48	48	53	--	55

EAGLE RIVER BASIN

9-690. EAGLE RIVER AT GYPSUM, COLO.

LOCATION.--At bridge at Gypsum, Eagle County, about 400 feet upstream from Gypsum Creek, about 520 feet upstream from bridge on U.S. Highways 6 and 24, and about 550 feet upstream from gaging station.
DRAINAGE AREA.--844 square miles.
RECORDS AVAILABLE.--Chemical analyses: April 1947 to September 1965.
Water temperatures: April 1949 to September 1965.
EXTREMES, 1964-65.--Dissolved solids: Maximum, 979 ppm Dec. 7-9; minimum, 139 ppm June 1-30.
Hardness: Maximum, 600 ppm Dec. 7-9; minimum, 94 ppm July 1-14.
Specific conductance: Maximum daily, 1,500 micromhos Dec. 8; minimum daily, 185 micromhos June 23.
Water temperatures: Maximum, 62°F July 25; minimum, freezing point on many days during December to March.
EXTREMES, 1947-65.--Dissolved solids: Maximum, 1,370 ppm Aug. 11, 12, 1952; minimum, 102 ppm May 26-31, 1961.
Hardness (1947-50, 1957-65): Maximum, 600 ppm Dec. 7-9, 1964; minimum, 70 ppm June 23, 1957.
Specific conductance: Maximum daily, 1,850 micromhos Aug. 6, 1949; minimum daily, 155 micromhos May 23, 1958.
Water temperatures (1949-65): Maximum, 76°F Aug. 24, 1949; minimum, freezing point on many days during winter months.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). Additional samples were collected for more comprehensive definition of water quality at this station. Minimum observed during water year: Dissolved solids, 131 ppm June 10. Records of discharge are given for Eagle River below Gypsum, Colo.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 1-31, 1964...	162					111		196	0	336	138				948	1.29	415	464	303	2.2	1210	7.9
Nov. 1-30.....	187					87		191	0	280	132				806	1.10	407	444	287	1.8	1180	7.6
Dec. 1-6.....	184					89		185	0	279	127				780	1.06	388	428	276	1.9	1150	7.8
Dec. 7-9.....	147					84		212	0	349	174				979	1.33	389	600	426	1.5	1410	7.7
Dec. 10-31.....	173					90		182	0	286	128				776	1.06	362	432	283	1.9	1140	7.7
Jan. 1-31, 1965...	166					100		172	0	282	135				769	1.05	345	408	267	2.2	1140	7.5
Feb. 1-28.....	152					106		172	0	282	145				793	1.08	325	408	267	2.3	1180	7.7
Mar. 1-18.....	138					106		170	0	278	150				786	1.07	293	410	271	2.3	1200	7.6
Mar. 19-23.....	132					127		181	0	298	175				864	1.18	308	430	282	2.7	1300	7.8
Mar. 24-31.....	143					91		161	0	283	118				735	1.00	284	395	263	2.0	1090	7.9
Apr. 1-19.....	206					75		158	0	256	95				659	.90	367	366	236	1.7	1010	7.8
Apr. 20-22.....	410					32		129	0	153	40				396	.54	438	252	146	.9	624	7.8
Apr. 23-27.....	555					23		119	0	99	26				283	.38	424	186	88	.7	463	7.9
Apr. 28-30.....	486					28		121	0	112	36				321	.44	421	206	107	.8	525	7.5
May 1-2.....	902					12		155	0	74	16				276	.38	672	201	74	.4	441	7.7
May 3-17.....	891					11		104	0	61	15				215	.29	517	145	60	.4	350	7.9
May 18-25.....	1735					4.1		105	1	35	6.5				167	.23	782	124	36	.2	268	8.3
May 26-31.....	1168					9.9		95	0	50	13				182	.25	574	127	49	.4	297	7.8
June 1-30.....	2985					4.6		82	0	36	5.2				139	.19	1120	102	35	.2	222	7.7

9-690. EAGLE RIVER AT GYPSUM, COLO.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
July 1-14, 1965...	2432					8.0		68	0	41	9.5				141	0.19	926	94	38	0.4	218	7.7
July 15-24.....	1755					14		86	0	60	17				202	.27	957	126	55	.5	310	7.5
July 25-31.....	1451					14		91	0	64	16				197	.27	772	134	59	.5	325	8.2
Aug. 1-3.....	1663					11		90	0	54	15				183	.25	822	127	53	.4	305	7.4
Aug. 4-11.....	918					20		107	0	84	29				265	.36	657	172	84	.7	442	7.5
Aug. 12-18.....	577					33		125	0	128	40				349	.47	544	220	117	1.0	557	7.5
Aug. 19-22.....	886					13		109	0	75	23				256	.35	612	171	82	.4	421	7.3
Aug. 23-31.....	519					33		128	0	128	46				372	.51	521	231	126	.9	591	7.5
Sept. 1-30.....	421					38		136	0	160	43				423	.58	481	256	144	1.0	651	7.9
Weighted average.....	--					22		102	--	86	29				268	0.36	522	166	82	0.6	411	7.7
Time-weighted average.....	722					62		146	--	196	84				555	--	--	308	188	1.3	820	7.6
Tons per day....	--					43		200	--	168	56				--	--	--	--	--	--	--	--
Analyses of additional samples																						
Mar. 25, 1965.....	A132	8.4	0.01	99	36	90	3.0	170	0	265	133	0.3	0.7	0.05	764	1.04	272	395	256	2.0	1130	7.8
June 10.....	A2820	5.4	.40	30	4.9	5.0	.9	77	0	33	4.8	.2	.3	.04	131	.18	997	94	31	.2	208	7.4
Sept. 9.....	A424	6.8	.08	80	17	30	2.0	134	0	159	40	.4	.5	.04	409	.56	468	268	158	.8	632	8.2

A Discharge at time of sampling.

9-690. EAGLE RIVER AT GYPSUM, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1	1080	1200	1110	1140	1080	1100	994	459	252	221	246	679
2	1100	1200	1130	1300	1160	1160	991	423	238	222	320	628
3	1140	1230	1090	1130	1300	1270	1050	325	214	193	349	679
4	1150	1200	1160	1090	1070	1210	968	330	204	198	360	626
5	1220	1210	1160	1050	1100	1200	1020	306	238	198	386	588
6	1180	1250	1250	1090	1180	1200	1050	319	254	214	401	615
7	1220	1230	1420	1050	1070	1190	1020	339	240	201	442	594
8	1240	1260	1500	1070	1070	1220	1040	335	250	227	447	651
9	1250	1270	1310	1050	1140	1200	1020	366	244	214	466	661
10	1250	1260	1110	1140	1120	1130	976	376	238	210	486	629
11	1250	1240	1080	1090	1180	1090	1020	397	211	234	502	680
12	1250	1240	1090	1080	1230	1100	1040	354	222	213	592	691
13	1240	1140	1210	1080	1310	1130	1070	331	227	242	552	689
14	1260	1250	1270	1110	1290	1120	1020	327	217	248	535	711
15	1270	1140	1250	1090	1310	1110	1030	368	235	275	537	731
16	1260	1140	1130	1110	1150	1120	997	359	208	284	540	756
17	1230	1140	1140	1190	1240	1160	930	388	253	301	571	763
18	1230	1120	1250	1210	1110	1150	853	280	219	274	566	770
19	1240	1140	1220	1230	1170	1400	859	293	238	328	379	640
20	1240	1190	1140	1190	1180	1260	745	299	192	304	395	658
21	1210	1290	1110	1170	1180	1170	581	291	186	310	413	656
22	1230	1170	1040	1210	1150	1170	545	268	194	332	489	669
23	1230	1290	1070	1150	1110	1400	494	248	185	349	526	639
24	1250	1170	1070	1310	1160	1090	425	210	190	366	557	665
25	1230	1150	1060	1140	1270	985	454	224	190	386	564	628
26	1220	1110	1080	1210	1310	1080	461	308	201	377	591	582
27	1240	1080	1090	1150	1210	1250	478	272	218	309	640	540
28	1210	1120	1080	1180	1170	1090	526	317	217	334	653	578
29	1220	1100	1070	1090	--	1090	547	275	205	265	644	534
30	1220	1090	1290	1080	--	1010	502	317	222	268	593	530
31	1200	--	1270	967	--	988	--	281	--	316	602	--
Average	1220	1190	1170	1130	1180	1160	823	322	220	271	494	648

EAGLE RIVER BASIN--Continued

9-690. EAGLE RIVER AT GYPSUM, COLO.--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																													Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	43	42	41	57	49	49	50	41	42	46	40	37	37	49	40	55	56	58	58	57	53	53	51	50	50	50	38	53	56	54	56	49
November	54	39	40	36	35	36	35	46	44	41	41	35	37	35	36	36	37	38	34	35	33	34	34	33	37	39	34	35	38	35	--	37
December	32	40	34	35	34	33	32	32	32	33	32	32	32	32	34	34	32	32	32	32	34	33	32	35	35	33	34	34	32	32	32	33
January	32	32	32	35	34	32	34	32	33	33	35	34	34	35	38	32	34	33	33	33	32	33	32	33	32	32	32	32	34	37	38	33
February	33	37	38	32	39	39	39	40	38	34	33	32	32	32	32	32	38	35	38	40	40	38	37	35	38	42	40	37	--	--	--	36
March	32	33	32	33	36	35	36	37	39	38	40	41	40	40	42	43	36	34	35	36	39	37	35	36	38	35	36	38	48	47	39	38
April	46	45	46	44	45	48	46	50	48	45	44	45	47	48	50	48	47	50	51	52	52	48	49	42	42	41	40	48	42	44	--	46
May	45	53	50	44	50	41	41	40	45	39	40	46	45	44	43	46	45	45	46	47	48	50	49	42	40	42	42	43	44	45	49	45
June	46	48	50	51	52	53	44	45	45	45	51	50	52	53	46	53	46	47	46	45	45	49	49	48	46	46	47	48	46	49	--	48
July	50	48	49	51	51	49	48	47	48	49	51	52	54	52	50	53	53	57	54	53	51	55	56	52	62	56	60	58	56	55	56	53
August	51	57	58	61	57	50	52	58	51	52	55	56	57	53	56	55	57	57	56	58	52	51	53	50	48	50	51	50	51	53	52	54
September	46	50	50	54	50	51	52	58	51	52	50	52	50	50	49	52	49	46	43	43	43	53	51	53	45	50	48	48	49	46	--	49

COLORADO RIVER MAIN STEM

9-711. COLORADO RIVER NEAR GLENWOOD SPRINGS, COLO.

LOCATION.--At Shoshone powerplant, 6 miles upstream from gaging station at Glenwood Springs, Garfield County, and 6.5 miles upstream from Roaring Fork River.
DRAINAGE AREA.--4,560 square miles, approximately, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: October 1941 to September 1965.
Water temperatures: May 1949 to September 1965.
EXTREMES, 1964-65.--Dissolved solids: Maximum, 666 ppm Dec. 29-31; minimum, 180 ppm Nov. 1.
Hardness: Maximum, 252 ppm Dec. 29-31; minimum, 123 ppm June 1-30.
Specific conductance: Maximum daily, 1,100 micromhos Dec. 31; minimum daily, 259 micromhos June 20.
Water temperatures: Maximum, 65°F July 3; minimum, freezing point on several days during December to March.
EXTREMES, 1941-65.--Dissolved solids: Maximum, 2,030 ppm Aug. 10, 1947; minimum, 105 ppm June 1-10, 1942.
Hardness: Maximum, 1,480 ppm Aug. 10, 1947; minimum, 72 ppm June 1-20, 1942.
Specific conductance: Maximum daily, 2,260 micromhos Aug. 10, 1947; minimum daily, 153 micromhos May 24, 1948.
Water temperatures (1949-65): Maximum, 71°F July 31, 1954, Aug. 19, 1955; minimum, freezing point on many days during winter months.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). Additional samples were collected for more comprehensive definition of water quality at this station. Minimum observed during water year: Hardness, 117 ppm June 10. Records of discharge are given for Colorado River at Glenwood Springs, Colo.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 1-16, 1964...	1205					78		141	0	101	108				449	0.61	1460	203	87	2.4	741	7.9
Oct. 17.....	1000					1.8		240	0	9.5	4.0				212	.29	572	208	11	.1	366	7.8
Oct. 18-31.....	888					86		156	0	123	122				532	.72	1280	242	114	2.4	859	7.7
Nov. 1.....	794					4.4		212	0	13	1.9				180	.24	386	180	6	.1	309	7.9
Nov. 2-30.....	834					91		157	0	134	125				543	.74	1220	246	117	2.5	858	7.6
Dec. 1-28.....	834					92		151	0	122	128				524	.71	1180	231	107	2.6	843	7.6
Dec. 29-31.....	705					148		160	0	154	200				666	.91	1270	252	121	4.1	1100	7.7
Jan. 1-31, 1965...	837					98		145	0	119	135				517	.70	1170	220	101	2.9	849	7.5
Feb. 1-28.....	787					104		148	0	116	145				531	.72	1130	222	101	3.0	874	7.6
Mar. 1-31.....	796					96		142	0	116	135				508	.69	1090	220	104	2.8	846	7.7
Apr. 1-22.....	1568					57		137	0	110	76				404	.55	1710	210	98	1.7	653	7.6
Apr. 23-30.....	2226					39		128	0	80	50				312	.42	1880	175	70	1.3	513	7.7
May 1-18.....	3314					28		123	0	55	32				242	.33	2170	143	42	1.0	407	7.5
May 19-31.....	5598					18		115	0	41	20				200	.27	3020	125	31	.7	327	7.5
June 1-30.....	7503					11		103	0	41	14				188	.26	3810	123	39	.4	307	7.8
July 1-31.....	4412					23		104	0	62	27				225	.31	2680	138	53	.9	378	7.8
Aug. 1-9.....	3926					28		110	0	63	33				237	.32	2510	142	52	1.0	408	7.7
Aug. 10-19.....	2236					50		126	0	94	67				353	.48	2130	188	85	1.6	598	7.9
Aug. 20-25.....	2885					34		115	0	73	41				258	.35	2010	154	60	1.2	458	8.0

COLORADO RIVER MAIN STEM--Continued

9-711. COLORADO RIVER NEAR GLENWOOD SPRINGS, COLO.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Aug. 26-31, 1965..	1955					56		120	0	88	76				343	0.47	1810	176	78	1.8	610	8.2
Sept. 1-30.....	1603					52		128	0	99	72				368	.50	1590	197	92	1.6	638	7.7
Weighted average.....	--					38		119	--	70	50				292	0.40	1810	159	62	1.2	483	7.6
Time-weighted average.....	2294					64		134	--	95	87				398	--	--	193	84	1.9	656	7.6
Tons per day....	--					234		737	--	436	307				--	--	--	--	--	--	--	--
Analyses of additional samples																						
Mar. 24, 1965.....	A699	10		61	14	82	2.7	136	0	106	128	0.5	0.8	0.04	495	0.67	934	208	96	2.5	818	7.7
June 10.....	A7370	9.0		36	6.3	12	1.0	103	0	41	15	.2	.3	.07	181	.25	3600	117	33	.5	296	7.2
Sept. 9.....	A1530	8.3	0.00	59	11	49	2.0	126	0	110	66	.4	.1	.04	366	.50	1510	194	91	1.5	592	8.0

A Discharge at time of sampling.

9-711. COLORADO RIVER NEAR GLENWOOD SPRINGS, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1	736	309	--	--	--	862	715	398	332	343	338	620
2	737	891	794	--	--	901	689	444	324	335	360	638
3	742	891	--	--	--	909	668	409	314	315	383	642
4	708	901	--	941	--	936	676	403	324	327	393	--
5	736	898	886	--	866	960	649	362	332	341	391	616
6	746	896	--	--	--	--	684	366	338	351	432	--
7	710	906	--	--	835	--	716	368	335	352	--	625
8	723	--	--	--	--	816	672	410	314	376	464	634
9	741	898	--	--	--	876	631	420	303	367	461	629
10	--	911	--	864	--	826	633	414	309	392	495	633
11	739	--	810	--	--	865	620	435	300	394	503	709
12	726	881	--	--	946	808	638	438	302	400	607	660
13	751	886	--	--	--	825	--	427	309	394	642	646
14	733	--	--	--	914	811	666	387	325	368	654	656
15	760	--	--	806	--	817	661	389	302	362	709	665
16	753	823	--	--	--	827	634	406	297	391	602	687
17	366	835	--	818	--	822	569	412	280	432	613	675
18	--	825	922	--	--	842	634	376	273	384	602	668
19	762	774	--	--	--	865	675	343	--	--	506	663
20	783	833	904	--	--	898	725	348	259	388	453	629
21	730	878	806	--	869	851	634	328	260	402	404	613
22	804	844	--	--	--	848	564	332	266	417	--	611
23	854	859	--	--	--	817	495	320	266	404	499	632
24	834	862	--	829	--	808	--	283	282	399	457	624
25	--	796	--	--	--	821	--	275	284	--	462	615
26	834	844	--	--	--	811	471	283	308	--	590	--
27	915	777	802	--	846	819	482	319	313	364	605	589
28	933	848	--	--	--	826	523	355	310	369	--	592
29	939	829	--	--	--	809	557	--	305	361	592	591
30	936	779	--	--	--	868	509	370	303	384	632	566
31	921	--	1100	809	--	756	--	--	--	390	598	--
Average	730	833	--	--	--	844	621	373	302	375	515	634

9-711. COLORADO RIVER NEAR GLENWOOD SPRINGS, COLO.--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																													Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	54	53	52	52	51	50	49	49	50	--	51	48	48	48	47	48	49	--	44	44	43	43	45	46	--	43	42	44	44	46	44	47
November	45	43	43	40	38	38	38	--	38	39	--	37	37	--	--	35	37	38	33	35	35	35	33	33	33	33	33	33	33	34	--	36
December	34	34	34	33	33	33	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	33	32	32	32	32
January	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	33	34	33	33	33	33	33	33	33	33	33	32	32	32	32	32	32
February	32	32	32	32	32	32	33	32	32	32	32	32	32	32	32	32	32	32	33	33	34	33	32	32	32	32	32	32	--	--	--	32
March	33	33	32	32	32	--	--	34	35	34	34	34	35	36	38	38	38	36	34	35	37	37	38	38	36	35	38	39	40	42	44	36
April	42	40	45	44	40	41	43	43	44	42	43	44	--	43	45	46	46	46	47	48	51	50	51	--	--	46	44	46	48	52	--	45
May	51	52	50	50	48	45	46	45	46	46	47	50	50	50	50	49	53	51	51	52	52	51	48	46	45	44	46	47	--	53	--	49
June	50	50	50	50	48	54	54	51	51	52	50	52	53	54	54	51	51	51	--	52	48	52	52	52	52	54	53	54	54	52	--	52
July	52	54	65	54	57	56	56	54	55	57	55	58	56	58	58	59	60	60	--	61	61	63	61	61	--	--	62	60	60	61	58	58
August	57	58	60	60	58	59	--	64	60	62	63	64	64	63	60	62	62	62	61	60	60	--	60	59	60	59	59	--	58	57	58	60
September	58	56	56	--	54	--	55	56	57	56	57	56	56	56	54	53	52	50	52	48	44	45	47	48	50	--	52	52	50	46	--	52

9-850. ROARING FORK RIVER AT GLENWOOD SPRINGS, COLO.
(Formerly published as Roaring Fork at Glenwood Springs)

LOCATION.--At gaging station at Glenwood Springs, Garfield County, 1,500 feet upstream from mouth.
DRAINAGE AREA.--1,460 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: November 1958 to August 1961, May 1962 to September 1965.
Water temperatures: May 1962 to September 1965.
EXTREMES, 1964-65.--Dissolved solids: Maximum, 471 ppm Oct. 1-31; minimum, 124 ppm July 1-13.
Hardness: Maximum, 298 ppm Oct. 1-31; minimum, 93 ppm July 1-13.
Specific conductance: Maximum daily, 763 micromhos Dec. 6; minimum daily, 193 micromhos June 21, 24.
Water temperatures: Maximum, 68°F Aug. 11, 12; mininum, freezing point Jan. 2.
EXTREMES, 1962-65.--Dissolved solids: Maximum, 492 ppm Sept. 20-30, 1963; minimum, 124 ppm July 1-13, 1965.
Hardness: Maximum, 320 ppm Oct. 1-13, 1963; minimum, 93 ppm July 1-13, 1965.
Specific conductance: Maximum daily, 825 micromhos Dec. 27, 1962; minimum daily, 189 micromhos May 26, 1964.
Water temperatures: Maximum, 71°F July 24, 1963; minimum, freezing point on many days during winter months.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). Additional samples were collected for more comprehensive definition of water quality at this station.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 1-31, 1964...	442					34		190	0	143	48				471	0.64	562	298	142	0.9	700	7.8
Nov. 1-30.....	489					28		192	0	140	34				439	.60	580	291	133	.7	648	7.7
Dec. 1-31.....	405					24		188	0	142	32				448	.61	490	294	140	.6	656	7.8
Jan. 1-31, 1965...	365					29		177	0	152	32				428	.58	422	284	139	.7	633	7.8
Feb. 1-28.....	329					37		164	0	162	34				432	.59	384	270	135	1.0	634	7.5
Mar. 1-31.....	333					43		156	0	162	32				424	.58	381	247	119	1.2	613	8.2
Apr. 1-20.....	507					32		175	0	156	23				390	.53	534	270	126	.8	593	7.5
Apr. 21-30.....	1434					8.8		131	0	79	6.8				241	.33	933	180	73	.3	373	7.6
May 1-19.....	2077					5.3		118	0	55	6.0				206	.28	1160	151	54	.2	323	7.8
May 20-25.....	4122					3.9		100	0	38	4.1				166	.23	1850	119	37	.2	250	7.9
May 26-31.....	2300					6.7		111	0	55	6.5				201	.27	1250	143	52	.2	313	8.1
June 1-15.....	4221					3.7		94	0	39	4.5				168	.23	1910	116	39	.1	245	7.5
June 16-30.....	7391					3.4		85	0	29	3.7				135	.18	2690	97	27	.2	207	7.6
July 1-13.....	6390					4.6		80	0	33	2.1				124	.17	2140	93	27	.2	203	7.5
July 14-31.....	4010					10		95	0	52	8.9				176	.24	1910	122	44	.4	286	7.7
Aug. 1-7.....	2350					17		115	0	70	14				218	.30	1380	150	56	.6	357	7.9

9-850. ROARING FORK RIVER AT GLENWOOD SPRINGS, COLO.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Aug. 8-31, 1965...	1348					24		149	0	98	25				309	0.42	1120	207	85	0.7	498	7.9
Sept. 1-30.....	1230					26		153	0	109	27				327	.44	1090	221	95	.8	530	7.7
Weighted average	--					12		113	--	64	12				218	0.30	951	150	57	0.3	337	7.6
Time-weighted average.....	1615					24		151	--	113	25				341	--	--	225	101	0.6	514	7.7
Tons per day.....	--					51		492	--	280	51				--	--	--	--	--	--	--	--
Analyses of additional samples																						
Mar. 24, 1965.....	A364	10	0.18	83	17	25	1.6	165	0	151	30	0.5	0.2	0.06	418	0.57	411	277	142	0.7	611	7.8
June 10.....	A5040	6.7	.06	36	4.9	4.2	.6	88	0	39	3.0	.0	.6	.06	147	.20	2000	110	38	.2	224	7.5
Sept. 9.....	A1380	8.7	.00	68	10	19	1.3	146	0	97	25	.3	.4	.05	305	.41	1140	213	93	.6	479	8.2

A Discharge at time of sampling.

9-850. ROARING FORK RIVER AT GLENWOOD SPRINGS, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1	731	658	634	596	614	611	596	305	255	205	296	545
2	736	643	621	639	681	637	588	310	295	200	323	533
3	736	642	636	599	646	669	584	282	258	197	354	532
4	749	635	630	599	633	655	589	271	265	201	368	477
5	736	647	655	607	631	629	597	279	265	199	364	516
6	746	656	763	613	605	617	605	312	252	201	375	477
7	739	661	749	609	633	618	604	317	250	203	391	488
8	735	656	747	610	638	621	603	348	243	199	438	528
9	740	655	678	636	627	622	589	352	231	200	460	508
10	738	643	632	636	635	602	596	354	229	213	456	566
11	731	637	639	628	640	616	609	362	223	205	454	561
12	721	642	628	641	679	617	616	348	236	205	454	590
13	715	650	698	636	684	619	598	351	227	211	475	561
14	701	622	751	624	621	610	608	310	223	290	490	590
15	699	618	631	629	608	614	597	332	220	291	465	492
16	692	631	619	639	654	619	595	340	212	229	548	581
17	699	620	629	645	632	590	558	305	206	290	500	563
18	680	626	699	659	635	525	559	283	206	307	494	588
19	679	659	622	662	625	647	547	305	204	237	400	526
20	680	658	639	652	626	670	510	263	207	245	471	520
21	705	658	629	642	624	619	450	247	193	251	490	533
22	643	648	613	624	625	614	393	241	200	254	445	543
23	695	657	618	667	606	621	371	237	203	305	494	498
24	645	645	591	629	648	590	357	237	193	308	556	488
25	689	618	638	612	637	620	343	261	197	275	551	502
26	668	618	637	637	619	620	362	283	206	278	553	495
27	655	614	637	646	626	633	380	312	225	288	547	490
28	651	647	615	618	610	604	393	352	210	296	553	488
29	650	614	731	618	--	586	365	326	--	295	554	462
30	643	639	727	621	--	609	326	314	200	316	500	466
31	645	--	602	628	--	600	--	258	--	312	551	--
Average	699	640	656	629	633	616	516	303	225	248	463	523

ROARING FORK RIVER BASIN--Continued

9-850. ROARING FORK RIVER AT GLENWOOD SPRINGS, COLO.--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																													Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	60	58	59	58	59	57	57	57	57	56	55	54	56	55	55	55	57	56	56	51	52	52	51	51	50	50	52	52	52	52	49	55
November	47	46	47	47	46	46	47	47	48	47	42	42	42	41	40	41	41	41	39	38	38	40	39	38	39	40	39	38	42	40	--	42
December	38	40	38	40	35	34	33	33	34	35	36	33	33	33	34	33	33	33	34	33	36	49	48	38	38	39	38	39	38	34	34	36
January	34	32	35	33	34	35	39	38	38	38	40	38	38	38	40	38	38	37	38	37	36	37	37	35	36	37	37	37	37	39	36	37
February	38	37	38	38	38	42	42	43	39	35	36	33	33	34	37	35	38	42	42	43	42	40	42	38	40	43	43	41	--	--	--	39
March	39	39	38	38	41	42	43	48	45	45	42	43	42	44	49	47	45	44	41	39	44	44	42	39	39	42	46	47	48	54	54	44
April	49	52	49	44	45	52	47	52	50	50	52	47	50	52	54	52	50	49	55	57	56	55	54	52	51	48	47	53	56	54	--	51
May	55	54	52	51	48	47	50	47	50	51	55	53	55	53	54	55	55	52	52	54	54	52	52	48	46	47	51	53	54	55	54	52
June	48	54	55	55	49	54	54	54	53	51	48	52	54	55	53	53	53	55	54	55	54	56	56	56	55	54	54	56	--	52	--	54
July	52	55	57	54	52	58	57	57	56	55	56	55	58	60	58	59	58	57	58	59	61	62	63	61	60	59	63	64	64	64	57	58
August	58	64	65	64	63	63	65	65	66	67	68	68	65	65	64	64	64	60	64	64	64	63	62	63	62	64	64	63	62	62	63	64
September	63	61	59	56	57	57	58	58	59	60	61	62	62	62	60	58	57	55	51	48	48	52	53	55	57	58	58	56	49	51	--	57

9-850. ROARING FORK RIVER AT GLENWOOD SPRINGS, COLO.--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Mar. 24, 1965.....	1350	36		364	35	34												
June 10.....	1000	45		5040	415	5650	10	10				43	56	76	93	97	100	VPWC
Sept. 9.....	1405	57		1380	19	71												

COLORADO RIVER MAIN STEM

9-955. COLORADO RIVER NEAR CAMEO, COLO.

LOCATION.--At Grand Valley project diversion dam, 3.7 miles upstream from Cameo, Mesa County, 0.4 mile upstream from Plateau Creek, and 5.9 miles downstream from gaging station.
DRAINAGE AREA.--8,050 square miles, approximately, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: October 1933 to September 1965.
Water temperatures: April 1949 to September 1965.
EXTREMES, 1964-65.--Dissolved solids: Maximum, 876 ppm Mar. 1-23; minimum, 188 ppm June 18-30.
Hardness: Maximum, 368 ppm Dec. 1-11; minimum, 118 ppm June 18-30.
Specific conductance: Maximum daily, 1,610 micromhos Dec. 10; minimum daily, 289 micromhos June 23.
Water temperatures: Maximum, 69°F Aug. 13; minimum, freezing point on many days during December to March.
EXTREMES, 1933-65.--Dissolved solids (1933-43, 1950-65): Maximum, 1,080 ppm Sept. 22, 1962; minimum, 143 ppm June 11-20, 1935.
Hardness (1933-35, 1957-65): Maximum, 474 ppm Sept. 22, 1962; minimum, 98 ppm June 21-30, 1935.
Specific conductance (1941-65): Maximum daily, 1,860 micromhos June 16, 1964; minimum daily, 244 micromhos July 2, 1947, July 3, 1957.
Water temperatures (1949-65): Maximum, 76°F Aug. 16, 1962; minimum, freezing point on many days during winter months.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). Additional samples were collected for more comprehensive definition of water quality at this station. Maximum observed during water year: Dissolved solids, 892 ppm Mar. 23.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 1-31, 1964...	1684			--	--	154		181	0	167	215				744	1.01	3380	292	144	3.9	1230	7.8
Nov. 1-30.....	1578			--	--	171		182	0	191	235				817	1.11	3480	308	159	4.2	1330	7.8
Dec. 1-11.....	1407			--	--	152		180	0	183	255				821	1.12	3120	368	220	3.4	1360	8.2
Dec. 12-31.....	1530			--	--	167		164	0	158	240				780	1.06	3220	274	139	4.4	1300	7.9
Jan. 1-31, 1965...	1489			--	--	172		170	0	179	235				807	1.10	3240	284	145	4.4	1310	7.5
Feb. 1-8.....	1472			--	--	171		138	0	180	220				731	.99	2910	240	127	4.8	1190	7.4
Feb. 9-28.....	1376			--	--	183		158	0	188	250				833	1.13	3090	280	150	4.8	1360	7.2
Mar. 1-23.....	1350			--	--	199		186	0	190	265				876	1.19	3190	292	139	5.1	1430	8.0
Mar. 24-31.....	1486			--	--	171		180	0	192	215				778	1.06	3120	280	132	4.4	1270	8.1
Apr. 1-14.....	2030			--	--	117		172	0	160	150				639	.87	3500	265	124	3.1	1060	7.9
Apr. 15-23.....	2829			--	--	85		154	0	134	110				509	.69	3890	235	109	2.4	849	8.0
Apr. 24-30.....	3884			--	--	60		146	0	90	70				373	.51	3910	180	60	1.9	627	8.2
May 1-8.....	6512			53	8.5	32		142	0	61	41				286	.39	5030	168	52	1.1	478	8.1
May 9-20.....	5762			55	10	47		154	0	71	59				339	.46	5270	180	54	1.5	572	8.0
May 21-31.....	10860			48	7.8	29		135	0	55	34				254	.35	7450	153	42	1.0	428	7.7
June 1-17.....	14040			42	6.8	23		118	0	47	26				214	.29	8110	132	35	.9	365	7.7
June 18-30.....	17320			38	5.8	18		99	0	41	24				188	.26	8790	118	37	.7	322	7.7
July 1-16.....	11340			--	--	24		104	0	49	34				223	.30	6830	132	47	.9	376	7.8
July 17-31.....	8255			--	--	32		130	0	72	43				293	.40	6530	172	65	1.1	485	8.0
Aug. 1-10.....	6201			--	--	50		128	0	78	65				349	.47	5840	169	64	1.7	557	7.6

9-955. COLORADO RIVER NEAR CAMEO, COLO.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Aug. 11-14, 1965..	3610			--	--	73		132	0	101	97				434	0.59	4230	191	83	2.3	699	7.7
Aug. 15-19.....	3416			--	--	81		154	0	136	103				520	.71	4800	237	111	2.3	819	7.7
Aug. 20-31.....	3666			--	--	80		139	0	112	103				453	.62	4480	203	89	2.4	735	7.9
Sept. 1-30.....	2888			--	--	92		161	0	132	120				551	.75	4300	240	108	2.6	896	7.8
Weighted average	--			--	--	61		134	--	87	81				380	0.52	4470	181	72	1.8	629	7.7
Time-weighted average.....	4353			--	--	114		156	--	135	155				590	--	--	239	111	3.0	968	7.7
Tons per day....	--			--	--	719		1570	--	1020	956				--	--	--	--	--	--	--	--
Analyses of additional samples																						
Mar. 23, 1965.....	A1530	9.3	0.00	88	18	187	5.3	188	0	191	257	0.5	1.1	0.05	892	1.21	3680	296	142	4.7	1430	7.7
June 8.....	A11900	7.9	.06	42	8.5	24	1.3	125	0	48	32	.2	.7	.05	236	.32	7580	139	36	.9	402	7.4
Sept. 8.....	A3310	9.2	.04	67	15	71	3.1	146	0	127	97	.4	3.2	.05	479	.65	4280	230	110	2.0	772	7.8

A Discharge at time of sampling.

9-955. COLORADO RIVER NEAR CAMEO, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1	--	1360	1220	1430	1000	1520	1070	520	420	332	442	853
2	--	1350	1220	1410	1040	1520	1030	529	402	362	467	860
3	--	1350	1220	1420	1220	1520	1060	456	380	362	486	910
4	--	1340	1200	1410	1240	1530	1060	456	384	350	497	912
5	--	1330	1190	1450	1220	1530	1050	449	374	339	500	912
6	--	1330	1160	1360	1240	1520	1050	442	370	349	519	924
7	--	1320	1440	1230	1280	1420	1060	474	361	356	642	899
8	1050	1340	1430	1180	1180	1430	1030	480	363	367	650	803
9	1060	1320	1570	1220	1330	1360	1020	606	369	368	652	823
10	1060	1370	1610	1210	1250	1340	1020	598	352	377	652	851
11	1070	1350	1540	1210	1270	1320	1000	622	367	387	667	851
12	1070	1410	1240	1210	1240	1350	991	621	363	386	669	904
13	1090	1320	1260	1210	1350	1350	994	581	361	409	695	904
14	1090	--	1360	1250	1400	1350	1010	567	326	397	748	921
15	1090	1340	1370	1240	1350	1340	848	555	319	399	953	944
16	1080	1310	1370	1250	1350	1340	861	567	324	393	727	947
17	1200	1340	1370	1240	1350	1460	828	569	318	552	764	968
18	1180	1330	1380	1270	1340	1470	820	569	309	556	816	984
19	1200	1300	1310	1270	1360	1460	783	501	299	508	786	981
20	1200	1350	1310	1360	1320	1470	910	482	304	526	698	974
21	1170	1340	1360	1360	1340	1470	953	391	307	494	655	935
22	1320	1320	1310	1380	1350	1470	853	392	294	449	621	935
23	1330	1300	1240	1360	1340	1420	709	396	289	472	624	896
24	1350	1310	1030	1370	1350	1240	609	377	291	474	701	853
25	1340	1310	1030	1370	1350	1300	620	374	350	460	696	848
26	1340	1350	1380	1360	1350	1300	640	380	350	463	751	848
27	1360	1240	1310	1250	1500	1250	655	432	349	453	738	848
28	1360	1220	1240	1240	1500	1320	629	481	347	463	746	846
29	1350	1190	1260	1280	--	1320	689	472	348	468	842	848
30	1350	1220	1360	1390	--	1320	498	489	331	488	840	807
31	1340	--	1400	1070	--	1050	--	489	--	433	843	--
Average	1210	1320	1310	1300	1300	1390	878	494	344	425	680	892

COLORADO RIVER MAIN STEM--Continued

9-955. COLORADO RIVER NEAR CAMEO, COLO.--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																														Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	--	--	--	--	--	--	--	53	55	55	53	53	51	51	51	51	50	49	49	47	47	46	46	45	45	45	48	48	50	50	49	--
November	48	47	45	45	45	44	43	42	42	42	43	43	44	--	44	44	43	40	38	37	37	36	36	35	35	35	34	34	34	35	--	40
December	35	34	35	35	36	36	33	33	33	33	33	32	33	32	32	32	33	33	33	33	33	34	33	34	34	33	33	33	33	32	32	33
January	32	32	32	32	32	32	33	33	33	33	32	32	32	32	32	33	34	34	34	35	35	35	35	34	34	33	32	32	33	33	35	33
February	35	36	36	36	36	36	37	37	36	35	32	32	32	32	32	32	32	33	33	33	33	33	33	33	34	34	32	32	--	--	--	34
March	32	32	32	32	34	34	35	36	37	38	41	42	42	42	45	45	45	40	40	41	42	42	43	40	40	40	39	42	46	47	47	40
April	47	47	47	46	46	46	46	46	45	45	46	46	46	46	48	50	50	50	49	52	54	54	55	51	51	50	49	47	50	53	--	49
May	53	53	49	48	47	47	48	49	48	48	52	55	55	55	56	56	56	57	55	55	54	54	53	50	47	47	47	50	50	52	54	52
June	54	54	52	52	52	53	53	--	--	52	52	55	55	55	55	54	53	54	54	54	54	54	54	55	54	54	54	55	54	54	--	54
July	54	55	55	56	56	57	57	57	58	57	59	58	59	58	60	61	62	62	63	64	62	63	64	64	64	64	65	65	65	66	62	60
August	61	63	63	64	64	65	66	66	67	67	68	68	69	67	--	68	68	67	65	67	65	64	64	64	63	63	62	62	61	60	60	65
September	60	60	60	60	60	60	59	59	60	59	59	58	60	59	59	59	59	59	56	55	52	49	50	52	52	52	52	54	55	52	--	57

9-1525. GUNNISON RIVER NEAR GRAND JUNCTION, COLO.

LOCATION.--At bridge on State Highway 141, 180 feet downstream from gaging station, 0.4 mile downstream from Whitewater Creek, 0.5 mile south of Whitewater, and 8 miles southeast of Grand Junction, Mesa County.
DRAINAGE AREA.--7,870 square miles, approximately, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: October 1931 to September 1965.
Water temperatures: April 1949 to September 1965.
EXTREMES, 1964-65.--Dissolved solids: Maximum, 1,620 ppm Oct. 1-31; minimum, 247 ppm June 15-30.
Hardness: Maximum, 900 ppm Oct. 1-31; minimum, 150 ppm Apr. 22-30.
Specific conductance: Maximum daily, 2,020 micromhos Oct. 9; minimum daily, 317 micromhos May 24.
Water temperatures: Maximum, 70°F Aug. 12, 14, 16; minimum, freezing point on many days during November to March.
EXTREMES, 1931-65.--Dissolved solids: Maximum, 2,820 ppm Sept. 11-20, 1934; minimum, 203 ppm May 11-20, 1944, May 22-26, 1964.
Hardness (1931-35, 1943-65): Maximum, 1,370 ppm Sept. 1-20, 1934; minimum, 130 ppm May 22-26, 1964.
Specific conductance (1941-65): Maximum daily, 2,730 micromhos Sept. 10, 1956; minimum daily, 280 micromhos May 23, 1948.
Water temperatures (1949-65): Maximum, 86°F Aug. 13, 1958; minimum, freezing point on many days during winter months.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). Additional samples were collected for more comprehensive definition of water quality at this station.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 1-31, 1964...	869					118		256	0	882	21				1620	2.20	3800	900	690	1.7	1890	8.0
Nov. 1-30.....	1089					137		250	0	785	18				1360	1.85	4000	750	545	2.2	1630	7.9
Dec. 1-31.....	959					76		219	0	542	18				1070	1.46	2770	604	424	1.3	1420	7.9
Jan. 1-31, 1965...	894					92		234	0	540	19				1010	1.37	2440	580	388	1.7	1390	7.9
Feb. 1-28.....	806					93		142	0	514	15				940	1.28	2050	470	354	1.9	1130	7.7
Mar. 1-31.....	846					110		199	0	517	16				979	1.33	2240	485	322	2.2	1240	7.7
Apr. 1-17.....	2017					64		166	0	301	5.4				600	.82	3270	318	182	1.6	826	7.8
Apr. 18-21.....	4465					32		148	0	153	5.2				368	.50	4440	220	99	.9	538	7.7
Apr. 22-30.....	7004					23		108	0	102	4.0				268	.36	5070	150	61	.8	380	7.6
May 1-25.....	9855					18		122	0	93	1.1				250	.34	6650	160	60	.6	388	7.7
May 26-31.....	7817					27		122	0	166	1.9				355	.48	7490	216	116	.8	529	7.8
June 1-4.....	7950					23		126	0	145	4.0				333	.45	7150	210	107	.7	492	7.4
June 5-14.....	10810					20		116	0	121	4.0				294	.40	8580	184	89	.6	438	7.5
June 15-30.....	12720					15		102	0	97	3.6				247	.34	8480	156	72	.5	373	7.7
July 1-2.....	9010					23		103	0	121	2.9				280	.38	6810	164	80	.8	400	7.5
July 3-16.....	9022					23		110	0	125	3.6				294	.40	7160	176	86	.8	428	7.8
July 17-29.....	6481					30		138	0	189	4.2				414	.56	7240	250	137	.8	580	7.8
July 30-31.....	4690					46		150	0	286	5.9				569	.77	7210	328	205	1.1	760	7.6
Aug. 1-11.....	4040					47		163	0	277	6.7				568	.77	6200	329	195	1.1	789	7.6
Aug. 12-26.....	1853					72		180	0	440	12				848	1.15	4240	465	317	1.5	1110	7.8

GUNNISON RIVER BASIN--Continued

9-1525. GUNNISON RIVER NEAR GRAND JUNCTION, COLO.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Aug. 27-31, 1965..	1446					142		203	0	713	15				1200	1.63	4690	621	454	2.5	1490	8.0
Sept. 1-21.....	2626					98		194	0	523	12				982	1.34	6960	508	349	1.9	1260	8.0
Sept. 22-30.....	2887					91		191	0	459	12				884	1.20	6890	453	296	1.9	1160	8.0
Weighted average	--					40		139	--	228	5.9				476	0.65	4640	273	159	0.9	651	7.7
Time-weighted average.....	3606					76		181	--	442	12				843	--	--	462	313	1.4	1080	7.7
Tons per day....	--					388		1350	--	2220	58				--	--	--	--	--	--	--	--
Analyses of additional samples																						
Mar. 22, 1965.....	A776	14	0.00	109	50	96	4.5	194	0	497	16	0.5	4.0	0.14	940	1.28	1970	478	319	1.9	1180	8.0
June 7.....	A8760	13	.00	48	15	19	1.6	102	0	131	3.2	.3	1.3	.06	276	.38	6530	180	96	.6	438	7.7
Sept. 8.....	A2790	16	.19	104	33	59	3.3	160	0	364	10	.5	4.3	.08	699	.95	5270	396	265	1.3	946	7.8

A Discharge at time of sampling.

9-1525. GUNNISON RIVER NEAR GRAND JUNCTION, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1	1760	1910	1330	1440	962	1330	947	403	554	364	719	1230
2	1780	1900	1250	--	--	1290	887	434	486	437	689	1300
3	1770	1890	1380	--	1290	1220	895	395	474	406	724	1400
4	1830	1850	--	1330	--	1290	833	357	455	385	687	1400
5	1870	1780	--	--	1330	1260	859	335	444	389	710	1220
6	1900	1780	1420	1380	--	1360	880	330	452	376	742	1230
7	1900	1760	--	--	--	1360	862	354	459	377	764	1310
8	2000	1800	--	1350	1280	1320	803	370	412	387	827	1000
9	2020	1890	1640	--	--	1280	942	377	381	400	856	1220
10	1920	1830	--	1370	946	1280	833	417	377	391	887	1190
11	1840	1790	1630	--	--	1240	770	415	436	414	928	1150
12	1930	1800	--	--	923	1160	763	430	492	476	970	1190
13	1930	1770	--	1420	--	1250	769	435	460	478	967	1190
14	1920	1680	1420	--	--	1220	791	414	442	470	1070	1220
15	1870	1530	--	1360	1390	1220	759	426	391	478	1140	1270
16	1770	1550	1540	--	--	1230	671	432	390	491	1050	1290
17	1800	1500	--	--	1340	1220	665	427	373	529	1070	1090
18	1820	1400	1350	1350	--	1200	637	404	369	499	1100	1170
19	1740	1470	--	--	1310	1170	575	364	363	557	1210	1480
20	1810	1480	--	1420	--	1210	463	367	353	514	1020	1400
21	1820	1460	1320	--	--	1200	458	362	359	543	967	1330
22	1850	1520	--	1400	1410	1230	400	347	333	562	1070	1180
23	1920	1560	1280	--	--	1180	355	328	341	598	1180	1140
24	1920	1440	--	--	1400	1120	347	317	355	613	1220	1190
25	1950	1470	1410	1340	--	1230	338	353	382	647	1210	1180
26	1930	1480	--	--	1300	1310	333	499	373	658	1270	1130
27	1950	1440	--	1410	--	1280	379	499	384	616	1340	1120
28	1990	1400	1320	--	--	1190	440	509	403	615	1390	1120
29	1990	1390	--	1380	--	1200	430	537	390	608	1470	1120
30	1950	1440	1460	--	--	1030	405	558	376	830	1470	1150
31	1910	--	--	--	--	1040	--	547	--	690	1660	--
Average	1880	1630	--	--	--	1230	649	411	408	509	1040	1220

GUNNISON RIVER BASIN--Continued

9-1525. GUNNISON RIVER NEAR GRAND JUNCTION, COLO.--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																													Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	57	56	56	56	56	55	56	57	55	57	55	57	52	52	52	53	54	52	54	49	50	52	49	49	49	46	47	50	50	51	51	53
November	49	47	45	45	44	43	42	44	44	45	44	42	40	39	39	34	37	40	35	34	33	32	34	33	34	35	36	36	36	37	--	39
December	38	37	38	--	--	32	32	32	32	32	34	32	32	32	32	32	32	32	32	32	33	32	32	--	37	--	--	39	--	32	--	--
January	33	32	32	32	32	32	--	37	--	37	--	--	36	--	35	--	--	35	--	35	--	37	--	--	35	--	32	--	37	--	--	--
February	38	--	35	--	38	--	--	37	--	39	--	32	32	32	32	32	32	32	34	--	--	40	--	33	--	38	--	--	--	--	--	--
March	37	32	33	32	33	37	42	40	39	41	43	41	43	43	45	43	38	35	34	40	42	43	42	40	44	44	44	48	50	50	50	41
April	47	48	42	44	41	42	45	45	46	43	42	43	40	45	46	49	48	49	49	50	52	50	47	49	48	48	45	46	49	50	--	46
May	53	52	50	50	48	45	47	46	47	50	47	51	51	50	50	49	55	50	54	54	53	54	52	49	47	48	50	51	53	57	58	51
June	58	54	56	56	54	56	58	57	56	56	53	57	56	57	57	56	55	56	56	57	57	57	57	58	59	56	55	56	58	59	--	56
July	56	60	60	60	61	62	62	61	60	61	63	62	61	62	61	65	60	61	66	68	64	65	65	61	66	67	68	69	69	69	68	63
August	66	65	67	67	66	66	66	66	65	67	68	70	69	70	67	70	67	67	67	67	65	64	64	63	63	64	65	65	65	66	67	66
September	60	62	62	61	63	62	60	62	61	61	61	60	59	60	59	57	56	50	51	51	52	50	53	55	56	57	59	57	55	51	--	57

GUNNISON RIVER BASIN--Continued

9-1525. GUNNISON RIVER NEAR GRAND JUNCTION, COLO.--Continued

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment											Method of analysis
							Percent finer than size indicated, in millimeters											
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
Mar. 22, 1965.....	1620	47		776	39	82	--	--		--		--	--	--	--			
June 7.....	1645	60		8760	346	8180	17	20		31		51	67	91	100			VPWC
Sept. 8.....	1100	63		2790	385	2900	36	42		69		95	97	99	100			VPWC

9-1635.3. COLORADO RIVER BELOW COLORADO-UTAH STATE LINE

LOCATION.--At Westwater, Grand County, Utah, 9.5 miles downstream from gaging station and about 4 miles downstream from Colorado-Utah State line.
DRAINAGE AREA.--17,900 square miles, approximately, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: May 1962 to September 1965.
Water temperatures: May 1962 to September 1965.
EXTREMES, 1964-65.--Dissolved solids: Maximum, 2,610 ppm Jan. 3-5; minimum, 243 ppm June 14-30.
Hardness: Maximum, 1,080 ppm Jan. 3-5; minimum, 150 ppm June 14-30.
Specific conductance: Maximum daily, 3,680 micromhos Mar. 19; minimum daily, 357 micromhos June 22.
Water temperatures: Maximum, 77°F Aug. 12; minimum, freezing point on several days during December and February.
EXTREMES, 1962-65.--Dissolved solids: Maximum, 2,610 ppm Jan. 3-5, 1965; minimum, 243 ppm June 14-30, 1965.
Hardness: Maximum, 1,080 ppm Jan. 3-5, 1965; minimum, 150 ppm June 14-30, 1965.
Specific conductance: Maximum daily, 3,680 micromhos Mar. 19, 1965; minimum daily, 357 micromhos June 22, 1965.
Water temperatures: Maximum, 80°F July 24, 1964; minimum, freezing point on several days in 1964-65.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). Additional samples were collected for more comprehensive definition of water quality at this station. Records of discharge are given for Colorado River near Colorado-Utah State line.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 1-31, 1964...	2418					168		228	0	633	155				1410	1.92	9210	700	513	2.8	1850	7.8
Nov. 1-30.....	2888					178		242	0	561	160				1300	1.77	10140	620	421	3.1	1750	7.8
Dec. 1-19.....	2497					192		248	0	513	185				1310	1.78	8830	580	377	3.5	1790	7.8
Dec. 20-31	3148					149		216	0	428	128				1060	1.44	9010	480	303	3.0	1480	7.8
Jan. 1, 1965.....	2230					140		228	0	393	170				1150	1.56	6920	532	345	2.6	1610	7.7
Jan. 2.....	2290					328		460	0	891	255				2240	3.05	13850	950	573	4.6	2760	7.8
Jan. 3-5.....	2387					373		468	0	1000	330				2610	3.55	16820	1080	696	4.9	3220	7.9
Jan. 6-8.....	2890					194		265	0	496	205				1340	1.82	10460	600	383	3.4	1870	7.8
Jan. 9-31.....	2594					148		218	0	380	170				1080	1.47	7560	492	313	2.9	1530	7.8
Feb. 1-9.....	2538					156		192	0	418	138				1020	1.39	6990	448	290	3.2	1430	7.7
Feb. 10.....	2610					261		220	0	658	235				1540	2.09	10850	630	450	4.5	2080	7.8
Feb. 11-28.....	2283					178		206	0	453	166				1120	1.52	6900	488	319	3.5	1580	7.9
Mar. 1-17.....	2299					167		178	0	417	170				1050	1.43	6520	456	310	3.4	1520	7.7
Mar. 18-31.....	2536					188		198	0	432	150				1000	1.36	6850	414	252	4.0	1470	7.8
Apr. 1-2.....	3830					129		126	0	323	110				728	.99	7530	315	212	3.2	1140	7.8
Apr. 3-7.....	4010					206		187	0	480	188				669	.91	7240	470	317	4.1	1690	7.8
Apr. 8-18.....	4594					97		158	0	275	80				475	.65	5890	318	188	2.4	1000	7.7
Apr. 19-20.....	6580					55		156	0	176	46				486	.66	8630	258	130	1.5	724	7.6
Apr. 21-30	10890					48		139	0	133	36				371	.50	10910	200	86	1.5	581	7.5
May 1-22.....	15450					33		142	0	108	28				325	.44	13560	196	80	1.0	523	7.8

9-1635.3. COLORADO RIVER BELOW COLORADO-UTAH STATE LINE--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
May 23-25, 1965...	27670					20		132	0	74	16				252	0.34	18830	163	55	0.7	412	7.8
May 26-31.....	16750					36		139	0	130	26				353	.48	15960	208	94	1.1	558	7.6
June 1-13.....	20850					29		127	0	114	20				308	.42	17340	188	84	.9	493	7.9
June 14-30.....	30190					23		110	0	81	18				243	.33	19810	150	60	.8	395	7.8
July 1-11.....	19660					27		118	0	106	22				292	.40	15500	180	83	.9	460	7.7
July 12.....	18500					50		240	0	275	30				646	.88	32270	416	219	1.1	866	7.8
July 13-16.....	19300					30		120	0	130	24				335	.46	17460	202	104	.9	518	7.5
July 17-31.....	14520					39		172	0	166	31				450	.61	17640	272	131	1.0	672	7.8
Aug. 1-8.....	11030					52		149	0	200	38				490	.67	14590	270	148	1.4	734	7.9
Aug. 9-29.....	5129					89		173	0	340	70				777	1.06	10760	400	258	1.9	1080	7.8
Aug. 30-31.....	4735					121		192	0	476	90				1040	1.41	13300	516	358	2.3	1420	7.7
Sept. 1-30.....	5652					103		190	0	417	74				918	1.25	14010	470	314	2.1	1270	7.7
Weighted average	--					64		153	--	212	54				531	0.72	11320	284	158	1.4	787	7.7
Time-weighted average.....	7893					119		189	--	362	107				871	--	--	424	269	2.3	1240	7.7
Tons per day....	--					1360		3270	--	4510	1160				--	--	--	--	--	--	--	--
Analyses of additional samples																						
Nov. 12, 1964.....	A2830	12	0.01	156	68	176	4.9	244	0	597	168	0.5	7.7	0.14	1340	1.82	10240	670	470	3.0	1820	7.8
Mar. 5, 1965.....	A1820	12	.02	111	43	165	4.9	192	0	398	178	.6	11	.10	1060	1.44	5210	452	294	3.4	1530	7.2
May 25.....	A25800	9.4	.25	42	11	20	1.7	117	0	74	14	.3	1.3	.07	248	.34	17280	151	55	.7	381	7.7
Sept. 1.....	A4650	12	.04	156	46	118	5.0	196	0	539	78	.5	6.8	.10	1090	1.48	13680	580	419	2.1	1470	7.9

A Discharge at time of sampling.

COLORADO RIVER MAIN STEM--Continued

9-1635.3. COLORADO RIVER BELOW COLORADO-UTAH STATE LINE--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1	1910	1940	1560	1610	1440	1540	1170	552	491	415	723	1460
2	1820	1960	1570	2760	1440	1510	1110	570	498	438	668	1320
3	1710	1950	1760	3110	1440	1520	1680	502	488	451	702	1300
4	1710	1860	1770	3060	1480	1550	1740	438	493	441	726	1340
5	1710	1850	1770	3500	1470	1730	1690	440	493	446	740	1380
6	1700	1850	1760	2140	1480	1680	1540	430	502	431	758	1300
7	1780	1840	1750	1740	1400	1750	1720	436	482	442	764	1270
8	1750	1820	1750	1720	1400	1420	1100	461	482	471	767	1270
9	1750	1850	1770	1500	1400	1420	1110	590	447	495	1070	1110
10	1770	1770	1780	1490	2080	1400	1100	598	562	495	1040	1220
11	1860	1830	1470	1470	1450	1480	1010	603	564	497	1000	1220
12	1860	1840	1750	1480	1430	1470	1010	592	438	866	1020	1240
13	1850	1800	1770	1480	1760	1480	1010	554	450	530	1050	1240
14	1810	1800	1770	1510	1770	1450	1010	556	425	535	1110	1300
15	1810	1800	1760	1550	1780	1440	904	556	426	497	1230	1300
16	1860	1720	1990	1620	1770	1440	904	563	402	512	1170	1350
17	1810	1740	1970	1530	1560	1450	921	576	397	679	1170	1340
18	2060	1610	1990	1520	1640	3620	904	561	372	670	1170	1370
19	1940	1590	2080	1520	1550	3680	722	522	367	654	1160	1290
20	2010	1600	1550	1570	1610	3660	725	453	379	617	1130	1330
21	1760	1600	1600	1550	1560	3660	595	452	367	656	1130	1320
22	1750	1600	1580	1550	1570	3670	585	472	357	677	961	1200
23	1840	1600	1390	1550	1530	1530	589	428	364	683	955	1190
24	1840	1660	1380	1560	1530	1430	591	415	365	653	1010	1200
25	1890	1640	1390	1550	1530	1430	544	393	395	684	1100	1200
26	1910	1670	1380	1530	1510	1430	492	505	400	677	1120	1200
27	1890	1650	1400	1560	1510	1400	593	514	401	682	1150	1170
28	1890	1580	1530	1580	1500	1760	592	580	418	684	1200	1200
29	1900	1560	1500	1520	--	1420	595	579	426	677	955	1120
30	1900	1580	1530	1510	--	1410	596	588	425	643	1360	1160
31	1900	--	1530	1510	--	1420	--	--	--	704	1470	--
Average	1840	1740	1660	1770	1560	1850	961	515	435	580	1020	1260

9-1635.3. COLORADO RIVER BELOW COLORADO-UTAH STATE LINE--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																													Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	61	60	60	60	59	58	56	59	60	60	57	54	55	53	52	55	56	54	53	50	49	51	51	50	51	52	52	50	51	50	50	54
November	51	50	49	47	44	43	45	43	43	44	43	41	41	41	40	38	37	37	36	37	36	36	36	36	36	34	35	35	35	34	--	40
December	35	35	35	35	34	34	35	34	33	34	35	33	32	33	33	33	32	32	32	33	33	33	34	34	35	35	35	34	34	34	33	34
January	33	33	33	34	33	34	34	34	35	34	36	36	36	36	35	34	35	35	35	36	37	37	36	35	35	35	36	37	37	39	40	35
February	39	38	38	38	38	37	37	38	39	37	35	34	34	33	33	32	32	34	35	36	37	35	37	38	40	40	41	40	--	--	--	37
March	40	38	37	36	37	37	38	39	39	41	42	42	43	45	46	46	45	42	42	42	44	44	45	46	47	47	48	47	49	51	51	43
April	49	51	50	49	47	48	50	48	47	48	48	49	49	50	50	51	51	52	54	56	55	56	56	56	54	52	51	50	52	53	--	51
May	55	57	59	57	56	53	51	49	50	52	54	55	55	56	57	57	59	61	61	60	58	59	57	55	52	52	54	56	58	60	--	56
June	61	61	59	60	60	61	61	59	60	57	54	58	59	58	58	56	55	57	58	60	57	58	58	61	59	58	57	57	59	61	--	59
July	58	59	64	63	62	66	66	67	66	67	68	65	66	68	69	65	67	70	71	72	71	70	71	71	72	72	70	70	70	71	72	68
August	71	68	70	70	69	70	71	73	75	76	76	77	75	73	71	70	71	70	70	70	68	68	66	66	66	66	65	68	67	67	67	70
September	67	66	64	65	64	64	65	66	66	66	65	65	64	63	64	63	59	54	51	52	50	53	54	57	59	61	61	60	59	56	--	61

9-2510. YAMPA RIVER NEAR MAYBELL, COLO.

LOCATION.--At county bridge, 1 mile north of Maybell, Moffat County, and about 3.5 miles downstream from gaging station.
DRAINAGE AREA.--3,410 square miles, approximately, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: November 1950 to September 1965.
Water temperatures: November 1950 to September 1965.
Sediment records: December 1950 to May 1958.
EXTREMES, 1964-65.--Dissolved solids: Maximum, 378 ppm Mar. 1-31; minimum, 78 ppm July 1-10.
Hardness: Maximum, 215 ppm Apr. 1-7; minimum, 44 ppm Aug. 8.
Specific conductance: Maximum daily, 613 micromhos Nov. 20, 27, 30; minimum daily, 112 micromhos June 8, July 1.
Water temperatures: Maximum, 71°F July 19, 26, 27; minimum, 33°F Dec. 21.
EXTREMES, 1950-65.--Dissolved solids: Maximum, 545 ppm Sept. 21-30, 1956; minimum, 64 ppm June 13, 1964.
Hardness: Maximum, 271 ppm Dec. 27-31, 1962; minimum, 43 ppm June 1-21, 1959.
Specific conductance: Maximum daily, 947 micromhos Sept. 24, 1955; minimum daily, 94 micromhos June 14, 1959.
Water temperatures: Maximum, 85°F Aug. 5, 1963; minimum, freezing point on many days during winter months.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). Additional samples were collected for more comprehensive definition of water quality at this station.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 1-31, 1964...	172					59		218	0	82	26				315	0.43	146	173	0	2.0	520	7.7
Nov. 1-30.....	231					54		220	0	92	24				350	.48	218	194	14	1.7	561	8.1
Dec. 1-31.....	273					57		205	0	113	24				359	.49	265	196	28	1.8	574	7.8
Jan. 1-31, 1965...	270					48		202	0	92	21				328	.45	239	187	21	1.5	533	8.0
Feb. 1-28.....	266					54		204	0	105	25				360	.49	259	194	27	1.7	563	7.5
Mar. 1-31.....	285					52		182	0	121	22				378	.51	291	192	43	1.6	550	8.1
Apr. 1-7.....	999					30		168	0	131	4.5				371	.50	1000	215	77	.9	544	7.5
Apr. 8-14.....	1429					19		120	0	62	8.9				232	.32	895	135	37	.7	331	7.4
Apr. 15-18.....	2425					4.8		98	0	35	2.6				168	.23	1100	110	30	.2	226	7.1
Apr. 19-23.....	4280					16		108	0	50	4.3				191	.26	2210	112	23	.7	275	8.0
Apr. 24-26.....	5160					9.4		86	0	27	3.3				141	.19	1960	82	11	.5	194	7.6
Apr. 27-30.....	3802					13		98	0	40	4.4				171	.23	1760	100	20	.6	244	7.7
May 1-4.....	6440					7.1		88	0	19	2.4				115	.16	2000	80	8	.3	178	7.5
May 5-31.....	6257					6.9		65	0	21	2.5				99	.13	1670	64	11	.4	147	7.5
June 1-30.....	7648					6.4		59	0	17	3.0				79	.11	1630	56	8	.4	136	7.2
July 1-10.....	3638					8.0		59	0	14	2.4				78	.11	766	49	1	.5	127	7.6
July 11-19.....	2146					12		72	0	22	4.6				106	.14	614	63	4	.7	172	7.2
July 20-22.....	1670					14		104	0	35	5.5				157	.21	708	100	15	.6	254	7.7
July 23-31.....	1658					15		123	0	42	6.0				172	.23	770	120	19	.6	293	7.8

9-2510. YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Aug. 1-7, 1965....	1167					15		119	0	37	8.2				170	0.23	536	114	16	0.6	289	7.7
Aug. 8.....	831					7.6		48	0	13	5.4				90	.12	202	44	5	.5	120	7.8
Aug. 9-31.....	623					20		136	0	55	10				206	.28	347	139	27	.7	362	7.7
Sept. 1-30.....	501					25		130	0	51	16				190	.26	257	127	20	1.0	340	7.9
Weighted average	--					12		83	--	30	5.0				128	0.17	626	81	13	0.5	202	7.3
Time-weighted average.....	1814					34		152	--	70	15				250	--	--	144	20	1.1	399	7.6
Tons per day....	--					59		409	--	149	25				--	--	--	--	--	--	--	--
Analyses of additional samples																						
Dec. 17, 1964.....	A300	13	0.11	48	21	51	2.4	234	0	92	28	0.3	0.4	0.06	366	0.50	296	204	12	1.5	572	8.2
Feb. 19, 1965.....	A250	13	.10	45	22	50	2.3	212	0	107	24	.3	.9	.10	366	.50	247	202	28	1.5	568	7.5
May 5.....	A6590	9.6	.79	27	6.3	6.5	1.3	92	0	27	2.6	.2	.3	.07	135	.18	2400	94	19	.3	197	7.4
Aug. 24.....	A656	9.2	.08	31	11	18	1.6	128	0	50	7.0	.3	.1	.05	195	.27	345	124	19	.7	307	7.8
Sept. 7.....	A447	3.3	.02	30	18	29	1.9	146	0	64	12	.2	.3	.04	247	.34	298	147	27	1.0	394	8.2

A Discharge at time of sampling.

9-2510. YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1	533	533	--	527	543	575	--	182	155	112	277	368
2	534	530	589	--	--	--	514	157	150	113	269	372
3	524	526	--	--	541	556	--	181	152	114	319	374
4	541	532	588	530	--	--	--	185	152	114	323	374
5	510	524	--	--	550	569	548	145	114	113	281	370
6	511	528	--	528	--	--	540	144	113	136	276	372
7	521	534	587	--	--	--	553	144	113	136	275	371
8	510	530	--	530	559	566	372	147	112	136	120	371
9	537	507	586	--	--	--	363	144	141	133	309	370
10	512	468	--	--	564	558	367	144	--	131	330	369
11	517	470	585	530	--	--	303	144	139	162	337	372
12	515	472	--	--	567	556	294	144	143	159	335	371
13	520	606	--	527	--	--	296	144	130	147	334	279
14	519	607	590	--	--	--	293	144	130	144	329	275
15	517	606	--	528	569	555	218	144	129	167	334	275
16	518	607	559	--	--	--	260	143	139	171	374	275
17	523	592	--	--	547	552	210	147	142	189	373	276
18	521	--	585	536	--	--	210	150	131	191	373	290
19	522	--	--	--	543	597	258	144	127	194	373	286
20	518	613	--	538	--	--	260	149	123	251	374	287
21	522	--	590	--	--	--	319	149	129	223	375	287
22	517	--	--	536	569	585	260	146	130	287	374	351
23	514	611	587	--	--	--	256	147	130	338	375	315
24	512	--	--	--	540	572	195	149	138	332	375	303
25	520	611	534	545	--	--	193	144	140	290	377	349
26	516	--	--	--	556	498	193	144	140	277	377	354
27	522	613	--	543	--	--	256	145	140	280	376	351
28	520	--	534	--	--	--	250	146	138	277	377	355
29	515	--	--	543	--	498	256	146	137	279	--	353
30	517	613	529	--	--	--	199	145	140	277	376	354
31	516	--	--	--	--	524	--	144	--	281	374	--
Average	519	--	--	--	--	--	305	149	134	198	335	335

9-2510. YAMPA RIVER NEAR MAYBELL, COLO.--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																														Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	63	57	62	56	56	61	61	57	57	60	60	59	60	59	60	58	62	59	51	58	56	55	57	57	54	56	57	53	59	50	51	57
November	48	56	54	46	53	44	52	44	50	41	40	39	37	36	37	37	35	--	--	35	--	--	34	--	34	--	35	--	--	35	--	--
December	--	34	--	35	--	--	35	--	35	--	34	--	--	34	--	35	--	34	--	--	33	--	35	--	34	--	--	35	--	34	--	--
January	34	--	--	34	--	35	--	34	--	--	35	--	34	--	35	--	--	34	--	34	--	34	--	--	34	--	34	--	34	--	--	--
February	34	--	34	--	34	--	--	34	--	34	--	34	--	--	34	--	34	--	34	--	--	34	--	34	--	34	--	--	--	--	--	--
March	34	--	34	--	34	--	--	34	--	34	--	34	--	--	34	--	34	--	34	--	--	34	--	34	--	34	--	--	34	--	34	--
April	--	34	--	--	34	34	37	35	36	38	39	39	40	41	39	42	40	38	45	37	39	45	47	40	49	40	49	50	43	43	--	40
May	40	42	47	40	41	49	58	59	49	49	58	49	49	58	59	50	50	59	49	57	49	58	49	--	41	43	50	49	59	50	59	51
June	49	49	59	50	51	49	51	51	48	--	54	53	52	54	51	51	51	52	52	52	59	52	53	62	51	61	51	62	54	65	--	53
July	53	63	50	63	51	64	52	65	65	65	65	67	68	64	65	68	50	64	71	--	70	70	64	62	70	71	71	65	64	70	68	64
August	69	68	68	69	62	61	59	67	65	66	60	67	60	65	60	67	60	65	59	62	59	65	59	65	59	65	60	66	--	60	65	63
September	59	66	65	65	59	66	61	66	59	65	60	66	59	66	59	64	64	57	64	58	63	57	63	58	63	57	64	56	63	56	--	62

9-2599.5. LITTLE SNAKE RIVER ABOVE LILY, COLO.

LOCATION.--At bridge on State Highway 318, about 6 miles upstream from gaging station, about 10 miles northeast of Lily, Moffat County, and 16 miles upstream from mouth.
DRAINAGE AREA.--3,730 square miles, approximately, upstream from gaging station.
RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1965.
Water temperatures: December 1950 to September 1960, October 1961 to September 1965.
Sediment records: May 1958 to September 1964.
EXTREMES, 1964-65.--Dissolved solids: Maximum, 1,270 ppm Aug. 18-19; minimum, 118 ppm June 1-10, 14-30.
Hardness: Maximum, 518 ppm Aug. 18-19; minimum, 68 ppm Sept. 22-25.
Specific conductance: Maximum daily, 1,820 micromhos Aug. 19; minimum daily, 159 micromhos June 22.
Water temperatures: Maximum, 83°F Aug. 9, 13, 14; minimum, freezing point on many days during November to March, September.
EXTREMES, 1950-65.--Dissolved solids (1950-51, 1952-65): Maximum, 2,330 ppm July 24, 1955; minimum, 108 ppm June 1-21, 1964.
Hardness (1950-51, 1952-65): Maximum, 1,340 ppm July 24, 1955; minimum, 64 ppm July 1-8, 10, 1957, June 1-14, 1958, Mar. 11, 1960.
Specific conductance (1950-51, 1952-65): Maximum daily, 3,150 micromhos Aug. 16, 1961; minimum daily, 135 micromhos June 10, 1958.
Water temperatures (1950-60, 1961-65): Maximum, 88°F July 17, 1955; minimum, freezing point on many days during winter months.
REMARKS.--Where no potassium (K) is reported, sodium (Na) and potassium (K) are calculated and reported as sodium (Na). Additional samples were collected for more comprehensive definition of water quality at this station. Records of discharge are given for Little Snake River near Lily, Colo.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 1-30, 1964...	4.8					247		238	0	525	89				1090	1.48	14.1	330	135	5.9	1560	8.0
Oct. 31.....	40					167		282	0	297	51				734	1.00	79.3	248	17	4.6	1100	7.9
Nov. 1-3.....	43.7					133		264	0	232	42				617	.84	72.8	228	11	3.8	926	8.0
Nov. 4-30.....	78.7					95		248	0	169	31				501	.68	106	217	14	2.8	762	7.9
Dec. 1-8.....	91.9					70		224	0	117	24				393	.53	97.5	188	4	2.2	598	7.9
Dec. 9-24.....	106					86		257	0	156	27				481	.65	138	223	12	2.5	733	7.9
Dec. 25-31.....	106					72		190	0	107	26				355	.48	102	148	0	2.6	561	7.9
Jan. 1-31, 1965...	92.3					62		230	0	101	21				396	.54	98.7	188	0	2.0	601	7.9
Feb. 1-8.....	93.1					65		190	0	83	21				324	.44	81.4	130	0	2.5	502	7.8
Feb. 9-28.....	96.2					86		224	0	119	37				431	.59	112	172	0	2.9	656	7.7
Mar. 1-7.....	104					103		241	0	281	31				670	.91	188	310	112	2.5	749	7.8
Mar. 8-28.....	124					95		194	0	126	52				430	.58	144	156	0	3.3	689	7.7
Mar. 29-31.....	863					78		168	0	96	42				354	.48	825	126	0	3.0	564	7.6
Apr. 1-17.....	940					75		184	0	105	22				356	.48	904	128	0	2.9	561	7.7
Apr. 18-23.....	838					49		164	0	100	12				318	.43	720	148	13	1.8	489	7.7
Apr. 24-30.....	1101					16		130	0	55	5.3				219	.30	651	136	29	.6	329	7.6
May 1-3.....	1963					17		162	0	42	5.0				238	.32	1260	146	13	.6	344	7.7
May 4-9.....	2190					62		132	0	23	3.1				180	.24	1060	123	15	2.4	260	7.8
May 10.....	1700					29		160	0	50	11				276	.38	1270	136	5	1.1	364	7.5

9-2599.5. LITTLE SNAKE RIVER ABOVE LILY, COLO.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
May 11-12, 1965...	1820					72		210	0	71	19				344	0.47	1690	116	0	2.9	522	7.9
May 13-14.....	1660					22		135	0	37	5.8				200	.27	896	109	0	.9	305	7.7
May 15-17.....	3590					38		163	0	44	7.2				238	.32	2310	107	0	1.6	362	7.9
May 18-21.....	3370					14		132	0	23	4.3				175	.24	1590	107	0	.6	264	7.6
May 22-31.....	2839					7.1		100	0	16	2.9				137	.19	1050	87	5	.3	197	7.6
June 1-10.....	2571					6.9		95	0	12	3.2				118	.16	819	80	2	.3	179	7.6
June 11-13.....	4757					18		140	0	33	5.2				195	.27	2500	117	2	.7	303	7.9
June 14-30.....	2462					8.5		88	0	14	3.5				118	.16	784	73	1	.4	180	7.7
July 1-11.....	686					21		109	0	33	4.9				149	.20	276	86	0	1.0	250	7.6
July 12-20.....	381					38		167	0	68	9.2				260	.35	267	139	2	1.4	419	8.1
July 21-24.....	336					179		299	0	170	55				612	.83	555	110	0	7.4	915	8.0
July 25-31.....	950					74		172	0	105	17				332	.45	852	113	0	3.0	526	8.0
Aug. 1-13.....	204					67		198	0	108	20				373	.51	205	157	0	2.3	586	7.9
Aug. 14-17.....	69.0					98		200	6	198	29				534	.73	99.5	209	35	3.0	807	8.4
Aug. 18-19.....	264					204		282	0	627	55				1270	1.73	905	518	287	3.9	1630	7.9
Aug. 20-22.....	277					132		241	0	270	37				680	.92	509	243	45	3.7	1010	8.0
Aug. 23-31.....	135					81		213	0	130	21				415	.56	151	163	0	2.8	652	8.0
Sept. 1-5.....	60.0					88		207	9	167	28				501	.68	81.2	206	21	2.7	749	8.6
Sept. 6-7.....	158					100		284	0	379	23				920	1.25	392	442	209	2.1	1120	8.2
Sept. 8-9.....	90.0					82		175	4	192	23				530	.72	129	205	55	2.5	774	8.4
Sept. 10-11.....	85					147		199	5	228	49				656	.89	151	158	0	5.1	957	8.5
Sept. 12-19.....	71.6					85		206	2	148	26				447	.61	86.4	178	6	2.8	690	8.3
Sept. 20-21.....	284					137		232	0	159	80				720	.98	552	170	0	4.6	868	8.2
Sept. 22-25.....	930					125		211	2	111	34				425	.58	1070	68	0	6.6	670	8.3
Sept. 26-30.....	718					85		184	0	86	15				344	.47	667	76	0	4.2	509	7.9
Weighted average	--					35		137	--	50	9.9				224	0.30	401	109	5	1.3	339	7.7
Time-weighted average.....	663					84		196	--	146	29				435	--	--	173	21	2.6	649	7.8
Tons per day....	--					62		245	--	89	18				--	--	--	--	--	--	--	--

GREEN RIVER BASIN--Continued

9-2599.5. LITTLE SNAKE RIVER ABOVE LILY, COLO.--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Analyses of additional samples																						
Feb. 19, 1965.....	100	16	0.21	56	15	74	2.3	235	0	129	31	0.4	0.1	0.07	442	0.60	119	202	9	2.3	668	7.5
May 5.....	A2670	14	.41	41	7.3	11	1.1	145	0	29	3.0	.3	.6	.06	185	.25	1330	132	13	.4	273	7.3
Aug. 24.....	A188	11	.16	42	7.8	78	2.3	188	0	122	20	.5	1.0	.07	372	.51	189	136	0	2.9	572	8.0
Sept. 7.....	A182	9.7	.19	61	37	86	3.2	171	0	308	20	.5	1.1	.08	659	.90	324	303	163	2.1	920	7.6

A Discharge at time of sampling.

9-2599.5. LITTLE SNAKE RIVER ABOVE LILY, COLO.--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1	1570	978	618	--	552	619	547	350	169	220	519	744
2	1590	916	575	--	516	661	--	--	196	212	533	754
3	--	885	560	--	531	810	515	339	--	228	--	771
4	1520	827	561	635	484	878	489	291	190	225	704	750
5	1450	817	586	--	447	806	463	262	167	237	570	729
6	1550	751	596	625	--	713	--	287	174	250	520	--
7	1600	712	643	616	443	706	620	236	166	243	521	1120
8	1530	710	672	--	531	689	578	234	165	259	524	803
9	1560	722	733	--	729	680	556	252	205	265	541	745
10	1440	736	747	--	660	698	571	364	170	292	619	1090
11	1500	713	741	610	700	706	548	569	309	294	610	824
12	1460	742	--	--	639	713	583	474	336	480	635	722
13	1480	761	715	591	680	715	576	339	263	436	695	694
14	1500	812	--	586	670	707	579	271	192	380	729	759
15	1550	908	--	597	660	697	--	--	--	363	827	781
16	1580	854	--	--	670	661	578	373	208	364	791	660
17	1650	794	--	--	696	801	587	351	167	378	861	633
18	1570	821	781	--	--	706	--	294	--	410	1440	647
19	1530	769	775	580	665	686	516	273	160	468	1820	624
20	1530	780	--	--	649	678	522	242	160	466	1130	--
21	1520	806	711	--	649	656	510	236	160	915	1050	868
22	1550	770	--	595	614	576	477	211	159	--	845	657
23	1640	--	601	599	594	560	410	187	165	--	673	634
24	1510	782	739	600	576	584	352	192	170	--	611	774
25	1560	782	507	593	684	719	334	199	176	--	631	622
26	1550	709	532	584	683	789	308	183	191	--	617	--
27	1600	656	523	590	681	795	313	181	185	--	637	564
28	1620	648	662	591	612	627	318	190	183	--	639	545
29	1620	642	--	587	--	566	329	199	194	--	655	470
30	1430	638	--	576	--	511	332	195	201	543	670	461
31	1100	--	--	576	--	616	--	202	--	510	703	--
Average	1530	774	--	--	616	688	481	275	192	--	744	720

9-2599.5. LITTLE SNAKE RIVER ABOVE LILY, COLO.--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																														Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	65	65	--	66	63	58	64	62	66	60	60	60	60	55	64	59	56	42	52	43	50	44	45	42	52	49	52	52	53	50	51	55
November	45	43	47	32	32	43	44	46	40	33	39	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	35
December	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
January	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February	32	32	32	32	32	--	32	32	32	32	32	32	32	32	32	32	32	--	32	32	32	32	32	32	32	32	32	32	--	--	--	32
March	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	34	34	35	32
April	34	--	41	39	38	--	42	43	43	44	41	42	44	45	--	51	50	--	54	54	56	55	54	53	42	46	45	54	57	59	--	47
May	59	--	54	54	48	48	48	48	49	50	54	52	54	50	--	55	52	58	58	59	58	60	54	54	53	50	53	54	56	57	62	54
June	57	60	--	56	58	54	60	61	58	61	58	57	59	60	--	56	54	--	62	66	61	65	67	64	61	60	61	65	70	67	--	61
July	69	72	74	73	74	75	67	72	72	75	74	72	74	75	76	75	81	78	75	74	72	--	--	--	--	--	--	--	--	76	65	--
August	77	70	--	--	74	59	74	74	83	78	63	82	83	83	76	79	73	71	69	--	66	--	--	--	--	--	--	--	--	--	--	--
September	--	66	71	65	66	--	55	66	65	67	64	67	66	--	59	32	32	33	44	--	44	50	48	48	52	--	54	56	48	48	--	55

9-3065. WHITE RIVER NEAR WATSON, UTAH

LOCATION.--At bridge on State Highway 45, 350 feet upstream from gaging station, about 1 mile downstream from Evacuation Creek, and 7 miles north of Watson, Uintah County.
DRAINAGE AREA.--4,020 square miles, approximately.
RECORDS AVAILABLE.--Chemical analyses: December 1950 to September 1965.
Water temperatures: December 1950 to September 1965.
EXTREMES, 1964-65.--Dissolved solids: Maximum, 1,050 ppm July 12; minimum, 250 ppm June 17-30.
Hardness: Maximum, 496 ppm July 12; minimum, 144 ppm Feb. 3.
Specific conductance: Maximum daily, 1,520 micromhos July 12; minimum daily, 373 micromhos June 23.
Water temperatures: Maximum, 77°F Aug. 12; minimum, freezing point on many days during winter months.
EXTREMES, 1950-65.--Dissolved solids (1950-54, 1955-65): Maximum, 1,990 ppm Aug. 24, 1963; minimum, 209 ppm May 23-31, 1964.
Hardness (1954-65): Maximum, 1,410 ppm Aug. 4, 1955; minimum, 144 ppm Feb. 3, 1965.
Specific conductance: Maximum daily, 4,450 micromhos Aug. 4, 1955; minimum daily, 319 micromhos June 29, 1951.
Water temperatures: Maximum, 88°F Aug. 8, 1954; minimum, freezing point on many days during winter months.
REMARKS.--Additional samples were collected to further define the quality of water at this station.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 1-31, 1964..	326					83		195	0	170	87		0.3		545	.74	480	280	120	2.2	851	7.9
Nov. 1-30.....	342					91		227	0	175	85		.3		581	.79	540	290	104	2.3	902	7.8
Dec. 1-21.....	306					112		268	0	204	94		1.0		667	.91	550	322	102	2.7	1020	7.9
Dec. 22-31.....	444					101		228	0	192	76		.3		587	.80	700	274	87	2.7	911	7.8
Jan. 1-31, 1965..	380					111		258	0	201	92		.4		660	.90	680	310	98	2.7	1000	7.7
Feb. 1-2.....	405					104		229	0	192	75		2.2		600	.82	660	270	82	2.8	908	7.6
Feb. 3.....	380					50		148	0	77	36		.2		320	.44	330	144	23	1.8	476	7.5
Feb. 4-28.....	404					109		252	0	197	88		.4		655	.89	710	300	93	2.7	990	7.8
Mar. 1-19.....	396					108		240	0	200	90		.3		646	88	690	296	99	2.7	1000	7.9
Mar. 20-31.....	779					128		236	0	315	90		1.2		798	1.09	1680	372	178	2.9	1170	7.8
Apr. 1-20.....	590					116		238	0	256	85		.7		705	.96	1120	330	135	2.8	1070	8.0
Apr. 21-30.....	590					68		194	0	161	58		.2		494	.67	790	260	101	1.8	762	8.1
May 1-21.....	1238					44		188	0	109	35		--		372	51	1240	222	68	1.3	590	8.0
May 22-31.....	2344					31		191	0	78	20		--		313	43	1980	198	41	1.0	498	8.0
June 1-10.....	2218					29		168	4	70	16		--		272	37	1630	176	32	1.0	437	8.3
June 11-13.....	2993					50		188	0	138	44		--		433	59	3500	250	96	1.4	676	7.8
June 14-16.....	3520					25		172	0	68	14		--		278	38	2640	178	37	.8	447	7.6
June 17-30.....	2699					22		154	0	63	15		--		250	34	1820	164	38	.7	403	8.0

9-3065. WHITE RIVER NEAR WATSON, UTAH--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
July 1-11.....	1309					32		150	0	79	24		--		273	.37	960	170	47	1.1	443	8.0
July 12.....	978					168		232	0	383	194		--		1050	1.43	2770	496	306	3.3	1520	7.8
July 13-19.....	834					58		210	0	129	36		--		427	.58	960	232	60	1.7	667	7.9
July 20-23.....	824					66		242	0	181	38		--		531	.72	1180	296	97	1.7	807	7.8
July 24-26.....	2136					105		278	0	404	42		--		890	1.21	5130	480	252	2.1	1200	7.7
July 27-30.....	802					71		228	0	184	39		--		515	.70	1120	280	93	1.8	784	7.9
July 31.....	850					109		292	0	326	41		--		427	.58	962	232	60	1.7	667	7.9
Aug. 1-14.....	600					69		218	0	153	49		--		477	.65	773	256	77	1.9	766	8.1
Aug. 15-31.....	452					87		241	0	194	64		--		598	.81	730	300	102	2.2	932	8.0
Sept. 1-19.....	518					84		226	0	167	69		--		555	.75	776	274	89	2.2	866	7.8
Sept. 20-30.....	595					67		203	0	144	52		--		472	.64	758	245	78	1.9	748	8.0
Weighted average	--					63		202	--	143	48		--		457	0.62	964	245	79	1.6	707	7.9
Time-weighted average.....	782					83		221	--	173	67		--		547	--	--	275	94	2.1	843	7.8
Tons per day...	--					133		426	--	302	101		--		--	--	--	--	--	--	--	--
Analyses of additional samples (instantaneous discharges shown)																						
Dec. 17, 1964...	370	15	0.08	71	27	108	2.0	224	0	203	100	0.3	0.7	0.05	642	0.87	641	290	106	2.8	981	8.1
Feb. 19, 1965...	500	14	.10	75	29	104	2.0	251	0	198	95	.3	.5	.06	654	.89	883	304	98	2.6	987	7.8
May 5.....	1240	14	.41	67	15	30	1.7	209	0	88	24	.3	1.3	.08	346	.47	1160	230	59	.9	542	7.4
Aug. 25.....	440	14	.01	71	23	93	2.5	222	0	182	66	.4	.3	.09	558	.76	663	274	92	2.4	871	7.9
Sept. 7.....	394	8.6	.18	65	80	115	5.7	207	0	386	102	.4	1.6	.12	916	1.25	974	490	320	2.3	1290	8.0

9-3065. WHITE RIVER NEAR WATSON, UTAH--Continued

Specific conductance (micromhos at 25°C), water year October 1964 to September 1965

Day	October	November	December	January	February	March	April	May	June	July	August	September
1	905	--	922	--	863	1020	1140	--	500	417	799	950
2	872	836	896	1080	952	937	1040	696	--	399	744	893
3	841	826	904	--	476	906	977	--	431	421	739	972
4	--	822	891	1140	958	1030	--	--	452	398	827	--
5	834	877	886	1170	--	1000	1020	513	458	--	772	978
6	832	830	917	1090	1020	--	--	499	426	402	--	--
7	845	822	997	1060	--	1110	1100	524	--	434	746	954
8	--	--	1020	925	974	1070	--	--	428	441	754	--
9	--	848	1060	931	925	--	--	--	417	471	745	836
10	837	853	1210	974	925	993	--	578	400	479	731	824
11	827	843	1170	1020	958	1010	1140	604	639	516	775	--
12	823	890	--	970	987	1020	1080	--	697	1520	764	804
13	843	--	1130	967	1010	965	--	633	692	744	782	809
14	885	838	--	958	--	940	--	641	500	645	809	805
15	--	--	1010	943	1030	984	1070	594	436	622	963	785
16	850	--	987	977	1090	983	--	--	404	610	987	795
17	--	910	1040	971	1130	1050	--	623	392	686	948	--
18	--	868	1110	964	1030	983	--	597	--	653	934	--
19	--	875	1190	993	977	971	984	606	380	704	912	--
20	--	866	--	980	1010	--	--	--	--	816	--	--
21	--	912	1060	997	990	--	--	560	398	902	832	--
22	--	--	--	--	961	1180	--	463	378	792	923	--
23	862	1030	951	1020	--	1370	852	504	373	701	--	--
24	840	1050	828	987	--	1220	--	473	377	--	1110	--
25	852	1070	--	964	949	1020	--	447	432	1230	869	--
26	833	--	863	1020	939	961	673	457	--	1170	879	791
27	834	946	836	1010	961	1150	--	538	418	866	876	759
28	836	929	892	1000	1010	1240	--	547	397	792	--	744
29	845	920	945	946	--	1340	--	551	435	753	928	725
30	838	949	954	971	--	1040	--	--	434	740	923	700
31	--	--	956	--	--	1120	--	--	--	1070	942	--
Average	--	--	985	1000	--	1060	--	--	451	703	852	--

GREEN RIVER BASIN--Continued

9-3065. WHITE RIVER NEAR WATSON, UTAH--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																														Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October	59	54	55	--	54	53	58	--	--	60	51	53	53	56	--	54	--	--	--	--	--	--	47	44	44	44	45	47	48	52	--	--
November	--	45	42	40	42	41	44	--	44	41	40	36	--	39	--	--	33	33	32	32	34	32	32	32	32	32	32	32	32	32	--	36
December	32	32	32	32	32	32	32	32	32	32	32	--	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
January	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	32
February	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
March	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	34	34	32	35	38	32
April	43	41	44	--	42	--	44	--	--	--	43	42	--	--	46	--	--	--	57	--	--	--	54	--	--	52	--	--	--	--	--	--
May	--	58	--	--	45	44	43	--	--	44	52	--	57	56	57	--	59	59	49	--	60	61	60	60	45	45	45	46	47	--	--	--
June	60	--	58	59	58	58	--	58	58	58	58	58	59	60	58	58	57	--	61	--	--	--	60	60	60	--	58	59	60	61	--	--
July	60	60	69	63	--	63	66	63	63	62	67	66	65	68	66	69	69	70	70	70	67	70	69	--	65	65	69	70	72	73	70	67
August	67	68	68	68	69	--	67	69	69	71	72	77	73	72	73	70	71	68	68	--	64	70	--	66	63	64	62	--	63	62	60	68
September	59	59	60	--	61	--	59	--	58	60	--	62	58	57	57	54	--	--	--	--	--	--	--	--	--	57	57	54	52	50	--	--

9-3529. VALLECITO CREEK NEAR BAYFIELD, COLO.

LOCATION.--At gaging station, 60 feet upstream from Fall Creek, 0.7 mile downstream from Bear Creek, 7 miles north of Vallecito Dam, and 18 miles north of Bayfield, La Plata County.
DRAINAGE AREA.--72.1 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1963 to September 1964.
Water temperatures: November 1962 to September 1965.
EXTREMES, 1964-65.--Water temperatures: Maximum, 58°F Aug. 26; minimum, freezing point on many days during November to March.
EXTREMES, 1962-65.--Water temperatures: Maximum, 62°F July 21, 1963; minimum, freezing point on many days during winter months.

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
Oct. 2, 1964	79																				65	
Nov. 6	19																				84	
Jan. 8, 1965	22																				72	
Feb. 9	20																				78	
Mar. 5	17																				81	
Apr. 1	33																				81	
May 3	508																				58	
June 1	502																				53	
June 14	1040																				53	
July 15	472																				45	
Aug. 16	134																				54	
Sept. 15	102																				72	

9-3529. VALLECITO CREEK NEAR BAYFIELD, COLO.--Continued

Temperature (°F) of water, water year October 1964 to September 1965

Month	Day																													Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
October																																
Maximum	47	46	47	47	46	45	44	44	43	44	44	43	39	42	42	42	43	43	43	42	41	40	39	39	38	38	39	39	40	41	40	42
Minimum	42	42	42	42	42	41	40	40	41	42	41	39	38	39	40	40	41	41	39	40	39	38	38	36	36	36	37	38	39	40	37	40
November																																
Maximum	38	38	37	36	36	36	35	35	36	36	36	35	33	34	33	33	33	33	33	33	33	32	32	32	32	32	32	32	32	32	--	34
Minimum	37	37	35	35	35	34	34	34	35	36	33	33	33	33	33	33	33	33	33	33	32	32	32	32	32	32	32	32	32	32	--	33
December																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
January																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
February																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	--	--	--	32
March																																
Maximum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	32	33	33	32	33	32	32	33	33	33	34	34	32
Minimum	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	33	34	32
April																																
Maximum	34	34	35	35	34	36	36	35	35	33	33	33	34	35	36	36	35	34	38	36	37	38	38	38	37	36	36	41	42	42	--	36
Minimum	34	34	34	34	33	33	34	33	33	33	33	33	33	34	33	33	33	33	33	33	33	34	34	34	35	35	34	35	34	36	--	34
May																																
Maximum	41	41	39	37	37	37	38	36	39	37	42	41	39	43	44	45	44	44	44	44	45	41	41	40	40	43	43	47	47	43	47	42
Minimum	36	36	36	35	34	36	36	34	33	36	35	38	38	38	39	38	39	39	39	40	40	40	40	38	38	38	39	39	39	40	40	38
June																																
Maximum	43	43	43	41	44	44	43	42	40	42	42	47	45	46	44	41	45	42	45	44	43	43	45	42	42	44	45	45	46	44	--	44
Minimum	40	39	39	38	39	38	39	39	39	39	40	41	40	40	39	39	39	39	40	39	38	39	39	41	40	38	38	38	39	40	--	39
July																																
Maximum	46	46	46	47	46	47	46	46	47	48	48	47	48	49	48	48	50	53	52	52	52	54	55	54	51	50	50	51	52	52	51	49
Minimum	42	42	40	40	41	41	42	42	42	43	44	43	44	43	45	45	46	46	46	46	46	47	47	48	48	47	47	48	49	49	48	45
August																																
Maximum	49	50	52	53	51	50	53	51	53	50	54	55	52	54	51	51	52	52	52	52	53	54	57	56	57	58	54	54	53	51	52	53
Minimum	48	47	46	47	46	46	46	47	47	48	47	48	48	48	49	47	49	50	48	47	49	50	51	50	50	51	47	48	50	47	46	48
September																																
Maximum	51	51	51	50	50	51	51	50	50	48	50	50	51	51	48	49	49	46	44	44	42	45	46	47	47	47	45	45	44	43	--	48
Minimum	45	48	48	46	47	48	44	49	46	44	46	47	46	45	44	40	46	43	43	40	38	40	40	41	42	42	43	44	41	39	--	44

MISCELLANEOUS ANALYSES OF STREAMS IN COLORADO

Chemical analyses, in parts per million, water year October 1964 to September 1965

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
PART 9. COLORADO RIVER BASIN																						
COLORADO RIVER MAIN STEM																						
9-705. COLORADO RIVER NEAR DOTSERO, COLO.																						
Mar. 25, 1965.....	705	11	0.02	59	11	36	2.3	142	0	99	46	0.5	0.4	0.05	344	0.47	655	194	78	1.1	534	7.3
June 1.....	4740	9.2	.05	37	7.8	6.8	1.1	98	0	45	5.2	.2	.8	.05	167	.23	2140	124	44	.3	256	7.6
Sept. 9.....	1610	9.5	.00	55	12	21	2.2	126	0	99	26	.4	.4	.03	290	.39	1260	188	85	.7	473	8.1
9-725. COLORADO RIVER AT GLENWOOD SPRINGS, COLO.																						
Mar. 24, 1965.....	699	10	--	48	22	153	4.8	146	0	114	234	0.5	0.2	0.05	691	0.94	1300	212	92	4.6	1170	7.8
June 10.....	7240	8.6	0.16	36	8.3	19	1.2	103	0	40	25	.1	.6	.05	202	.27	3950	124	40	.7	324	7.6
Sept. 9.....	1560	9.2	.07	55	12	78	3.4	128	0	97	106	.4	.7	.03	430	.58	1810	188	83	2.5	744	7.8
GUNNISON RIVER BASIN																						
9-1495. UNCOMPAHGRE RIVER AT DELTA, COLO.																						
Mar. 22, 1965.....	68	12	0.29	277	121	299	5.8	272	0	1530	32	0.9	20	0.30	2600	3.54	477	1190	967	3.8	2780	7.8
June 7.....	801	16	.11	156	43	80	3.1	194	0	555	8.4	.7	5.2	.19	1020	1.39	2210	565	406	1.5	1270	7.7
Sept. 8.....	360	20	.03	269	80	150	4.1	284	0	1000	17	1.0	13	.25	1780	2.42	1730	1000	767	2.1	2050	8.0
GREEN RIVER BASIN																						
9-3062. PICEANCE CREEK BELOW RYAN GULCH, NEAR RIO BLANCO, COLO.																						
June 8, 1965.....	17			87	107			736	0		18				1360	1.85	62.4	656	52		1870	8.1

MISCELLANEOUS ANALYSES OF STREAMS IN COLORADO--Continued

Chemical analyses, in parts per million, water year October 1964 to September 1965--Continued

Date of collection	Discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
PART 9. COLORADO RIVER BASIN--Continued																						
GREEN RIVER BASIN--Continued																						
9-3062.22. PICEANCE CREEK AT WHITE RIVER, COLO.																						
Apr. 10, 1965.....	15																				3080	
June 8.....	16			24	107			1430	59		80				2370	3.22	102	500	0		3370	8.4
9-3062.55. YELLOW CREEK NEAR WHITE RIVER, COLO.																						
Apr. 8, 1965.....	2.6			18	59			1420	102		112				2530	3.44	17.8	288	0		3500	8.5
May 4.....				20	151			1600	98		128				2750	3.74		670	0		3740	8.6

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
PART 6. MISSOURI RIVER BASIN																		
PLATTE RIVER BASIN																		
6-7070. NORTH FORK SOUTH PLATTE RIVER AT SOUTH PLATTE, COLO.																		
Oct. 1, 1964	1400	55		43	2	0.2	--	--				--	--	--	--	--		
Oct. 12	1300	49		61	5	.8	--	--				--	--	--	--	--		
Oct. 27	1240	43		209	8	4	--	--				--	--	--	--	--		
Nov. 9	1120	39		201	8	4	--	--				--	--	--	--	--		
Nov. 24	1135	32		122	5	2	--	--				--	--	--	--	--		
Dec. 7	1150	32		D 100	7	2	--	--				--	--	--	--	--		
Jan. 5, 1965	1310	32		D 90	3	.7	--	--				--	--	--	--	--		
Jan. 20	1115	32		D 90	4	1	--	--				--	--	--	--	--		
Mar. 8	1315	33		D 30	8	.6	--	--				--	--	--	--	--		
Apr. 7	0830	39		61	4	.7	--	--				--	--	--	--	--		
Apr. 29	1345	52		D 145	9	4	--	--				--	--	--	--	--		
May 17	1120	51		296	28	22	--	--				55	72	86	100	--		V
June 1	1330	52		349	44	41	--	--				53	66	85	100	--		V
June 15	1120	52		927	315	788	18	21		36		59	72	84	95	98	100	VPWC
June 30	1045	58		631	107	182	10	18				48	67	86	98	100		VPWC
July 13	0900	76		488	114	150	--	--				--	--	--	--	--		
Aug. 12	1000	57		484	82	110	--	--				--	--	--	--	--		
Aug. 23	0945	55		506	56	77	--	--				37	55	83	99	100		V
Sept. 13	1200	53		260	14	9.8	--	--				63	77	90	100	--		V
6-7075. SOUTH PLATTE RIVER AT SOUTH PLATTE, COLO.																		
Oct. 1, 1964	1245	53		84	3	0.7	--	--				--	--	--	--			
Oct. 27	1145	43		242	14	9.1	--	--				--	--	--	--			
Nov. 9	1220	39		228	4	2	--	--				--	--	--	--			
Nov. 24	1250	32		D 170	7	3	--	--				--	--	--	--			
Dec. 7	1310	32		118	4	1	--	--				--	--	--	--			
Dec. 18	1205	32		118	2	.6	--	--				--	--	--	--			
Jan. 5, 1965	1145	32		111	4	1	--	--				--	--	--	--			

D Daily mean discharge.

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965--Continued
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
PART 6. MISSOURI RIVER BASIN--Continued																		
PLATTE RIVER BASIN--Continued																		
6-7075. SOUTH PLATTE RIVER AT SOUTH PLATTE, COLO.--Continued																		
Jan. 20, 1965	1230	33		111	6	2	--	--				--	--	--	--			
Apr. 7	0855	40		115	3	.9	--	--				--	--	--	--			
Apr. 29	1445	54		748	12	24	--	--				54	70	80	100			V
May 17	1350	54		580	13	20	--	--				70	87	95	100			V
June 1	1430	53		685	21	39	--	--				60	73	90	100			V
June 15	1300	54		1010	141	385	27	35				83	94	99	100			VPWC
June 30	1250	59		716	78	150	12	15				55	--	--	--			VPWC
July 13	0945	56		902	49	120	--	--				--	--	--	--			
Aug. 12	1130	59		685	45	83	--	--				47	66	90	100			V
Aug. 23	1030	56		738	45	90	--	--				36	51	82	99	100		V
Sept. 13	1245	56		445	9	10	--	--				59	61	78	100			V
6-7520. CACHE LA POUDRE RIVER AT MOUTH OF CANYON, NEAR FORT COLLINS, COLO.																		
Oct. 22, 1964	1230	45		28	4	0.3	--	--				--	--	--	--			
Nov. 5	1230	44		24	6	.4	--	--				--	--	--	--			
Nov. 19	1210	33	D	18	0	0	--	--				--	--	--	--			
Dec. 2	1230	34	D	14	0	0	--	--				--	--	--	--			
Dec. 29	1100	32	D	11	3	.1	--	--				--	--	--	--			
Jan. 13, 1965	1030	33	D	11	5	.1	--	--				--	--	--	--			
Apr. 9	1400	55		27	3	.2	--	--				--	--	--	--			
Apr. 28	1310	53		78	2	.4	--	--				--	--	--	--			
May 5	1320	52		448	8	9.7	--	--				--	--	--	--			
May 19	1610	59		359	9	8.7	--	--				--	--	--	--			
June 3	1300	50		1300	27	95	--	--				63	79	91	100			V
June 22	1830	55		2470	82	547	15	20				52	65	79	97	100		VPWC
July 2	1615	59		1730	32	149	--	--				49	68	87	100			V
July 22	1540	65		999	12	32	--	--				--	--	--	--			

D Daily mean discharge.

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965--Continued
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
PART 6. MISSOURI RIVER BASIN--Continued																		
PLATTE RIVER BASIN--Continued																		
6-7520. CACHE LA POUDRE RIVER AT MOUTH OF CANYON, NEAR FORT COLLINS, COLO.--Continued																		
Aug. 13, 1965	1510	70		332	118	106	55	65				100	--	--	--			PWC
Aug. 24	1115	58		332	81	73	42	49				100	--	--	--			PWC
Sept. 14	1500	62		112	16	4.8	--	--				--	--	--	--			
PART 9. COLORADO RIVER BASIN																		
EAGLE RIVER BASIN																		
9-700. EAGLE RIVER BELOW GYPSUM, COLO.																		
Mar. 25, 1965	0945	35		132	49	17												
June 10	1625	49		2820	243	1850	15	19				59	70	82	90	92	93	VPWC
Sept. 9	1650	60		424	57	65												
COLORADO RIVER MAIN STEM																		
9-705. COLORADO RIVER NEAR DOTSERO, COLO.																		
Mar. 25, 1965	0850	32		705	24	46												
June 10	1445	50		7230	565	11000	12	16		26		47	57	65	80	95	100	VPWC
Sept. 9	1545	62		1610	43	190												
9-725. COLORADO RIVER AT GLENWOOD SPRINGS, COLO.																		
Mar. 24, 1965	1500	--		699	27	51												
June 10	0900	50		7240	277	5410	15	21				67	85	96	99	100		VPWC
Sept. 9	1200	61		1560	57	240												

Periodic determinations of suspended-sediment discharge and particle size, water year October 1964 to September 1965--Continued
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Suspended sediment: Percent finer than size indicated, in millimeters											Method of analysis
							0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
PART 9. COLORADO RIVER BASIN--Continued																		
GUNNISON RIVER BASIN																		
9-1495. UNCOMPAHGRE RIVER AT DELTA, COLO.																		
Mar. 22, 1965.....	1400	49		68	386	71	--	--		--		--	--	--				
June 7.....	1400	65		801	675	1460	26	33		53		83	92	98	100			VPWC
Sept. 8.....	0930	59		360	328	319	37	49		78		96	98	100				VPWC

MISCELLANEOUS ANALYSES OF STREAMS IN COLORADO--Continued

Particle-size analysis of bed material, water year October 1964 to September 1965
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Bed material: Percent finer than size indicated, in millimeters											Method of analysis
							0.062	0.125	0.250	0.500	1.000	2.000	4.000	8.000	16.00	32.00	64.00	
PART 6. MISSOURI RIVER BASIN																		
PLATTE RIVER BASIN																		
6-7520. CACHE LA POUDRE RIVER AT MOUTH OF CANYON, NEAR FORT COLLINS, COLO.																		
June 22, 1965.....	1830			2470					1	18	44	80	96	100				SV

Concentrations of dissolved constituents, dissolved solids, and hardness given in parts per million

Well number	Geologic source 1/	Depth of well	Date of collection	Temperature (°F)	Silica (SiO_2)	Iron (Fe) 2/	Manganese (Mn) 2/	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH
																				Ca, Mg	Noncarbonate				
PART 6. MISSOURI RIVER BASIN																									
SOUTH PLATTE RIVER BASIN																									
DENVER AREA (SURFICIAL DEPOSITS)																									
(C-1-67)26aadd	Qb,Ql	41	9-15-65	61	23	0.26	--	103	19	93	4.0	284	0	173	77	1.0	15	0.22	660	336	103	37	2.2	1020	7.7
36ccc	Qb,Ql	45	9-27-65	54	26	.01	--	148	35	116	.7	395	0	237	137	1.6	43	.16	988	515	191	33	2.2	1480	7.9
(C-2-67)7ddb	Qpp,Ql	40	9-20-65	56	16	.02	--	133	20	102	4.1	442	0	226	32	.7	22	.38	788	414	52	35	2.2	1150	7.8
9dadc	Qb,Ql	50	9-15-65	54	22	.02	--	261	69	329	5.4	333	0	312	734	1.4	28	.30	2020	937	664	43	4.7	3320	7.6
30dcbc	Qpp,Ql	--	9-15-65	56	22	.02	--	172	32	158	6.4	314	8	390	145	1.1	33	.27	1150	560	289	38	2.9	1640	8.3
(C-3-67)18abcd	Qpp,Qb, Ql	32	9-15-65	64	25	.08	--	160	45	187	14	382	10	413	125	.6	89	.43	1280	585	255	40	3.4	1800	8.3
(C-3-68)3cddc	Qb,Ql	33	9-15-65	61	21	.14	--	107	23	101	3.4	296	0	217	54	.9	43	.13	738	364	121	37	2.3	1090	8.1
14acbc	Qb,Ql	34	9-15-65	61	25	.03	--	122	22	195	10	440	0	146	212	1.5	28	.37	1010	395	34	51	4.3	1610	8.1
(C-3-69)20acc	Qpp,Qb Ql	32	9-16-65	54	14	.22	--	50	13	21	2.2	126	0	91	14	.3	15	.12	284	176	73	20	.7	441	7.4
(C-4-67)17ddbc	Qb,Ql	46	9-15-65	54	27	.09	--	97	13	48	3.4	263	0	121	33	.8	19	.03	507	295	79	26	1.2	769	7.5
(C-4-68)11daab	Qpp,Qb, Ql	49	9-15-65	58	26	.04	--	220	32	139	8.6	384	18	442	131	.7	21	.58	1250	680	336	30	2.3	1730	8.4
(C-4-68)22ccab	Qpp,Qb, Ql	28	9-28-65	52	19	.20	--	200	40	155	5.5	266	0	467	175	.9	80	.42	1330	665	447	33	2.6	1850	8.0
(C-4-69)34bbba	Qpp,Qb, Ql	32	9-14-65	56	21	.07	--	86	14	49	1.4	343	0	71	7.1	1.1	5.7	.00	420	270	0	28	1.3	673	7.6
DENVER AREA (BEDROCK)																									
(C-1-66)4cdcd	Kdlc	360	7-15-65	62	9.2	.04	--	3.0	.9	159	1.8	398	0	17	4.5	3.9	.3	.07	399	11	0	96	21	661	8.1
4dcad	Kdmc	188	7-15-65	67	14	.08	--	78	18	140	2.9	323	0	248	42	.6	4.3	.08	699	266	1	53	3.7	1050	7.9
21cddc	Kdmc	230	9-15-65	60	9.4	.68	--	13	.7	209	.8	175	0	325	19	1.6	.3	.06	652	35	0	93	15	1020	8.0
(C-1-67)3dccb	Klb,Kla Kfm	1100	7-15-65	68	12	.02	--	1.6	.5	235	.6	500	20	49	47	1.4	1.0	.23	563	6	0	99	42	932	8.5
(C-2-67)22aabb	TKdu	180	9-15-65	65	8.6	.15	--	6.8	.7	133	1.3	178	0	49	74	2.4	.0	.04	355	20	0	93	13	631	7.6
(C-3-67)35adda	Kdmc Kdlc	1100	9-28-65	64	7.3	.27	--	17	2.9	6.4	1.0	43	0	25	8.0	1.0	.2	.02	91	54	19	20	.4	144	7.3
36acdb	Kdmc	927	7- 6-57	63	13	A.10	.00	3.2	1.2	75	1.0	194	2	2.6	4.0	2.4	.3	--	B200	13	0	92	9.0	328	8.3
			9-15-65	61	4.5	.11	--	5.2	0	74	.7	197	0	2.9	9.9	1.6	.1	.07	202	13	0	92	8.9	341	7.8
(C-3-68)7cabb	Kdlc	616	9-16-65	60	9.7	.24	--	8.2	0.4	144	1.8	284	0	88	5.4	1.7	.2	.01	398	22	0	93	13	632	7.6
(C-3-69)30abab	TKdu	100	9-16-65	59	23	.24	--	61	15	72	3.1	147	0	219	20	.9	8.3	.02	505	214	93	42	2.1	748	7.5
(C-5-66)6dbbd	Klb,Kla Kfm	2182	9-15-65	82	13	.14	--	20	3.4	33	2.7	131	0	23	1.9	.8	.1	.05	158	63	0	52	1.8	250	7.6
(C-5-68)24ddab	Klb,Kla Kfm	2100	9-14-65	76	12	.09	--	18	2.7	37	2.3	134	0	23	1.8	1.2	.1	.02	161	56	0	58	2.2	257	7.8
28bccc	TKdu	693	9-14-65	63	10	.13	--	8.4	.7	57	1.7	152	0	22	2.2	1.4	.1	.05	175	24	0	83	5.1	279	7.8
(C-6-65)18adaa	TKdu	409	9-14-65	57	31	.12	--	36	4.1	13	3.2	142	0	17	4.9	.6	1.6	.03	181	107	0	20	.5	265	7.7

(C-6-68)4abaa	Kdmc	760	9-14-65	64	11	.26	--	15	1.7	41	2.3	135	0	23	2.2	1.2	.1	.05	160	45	0	65	2.7	254	7.9
(C-6-69)1bbbc	Kdlc	264	9-14-65	60	8.2	.40	--	55	7.1	166	4.0	269	0	254	35	.8	1.3	.11	660	166	0	68	5.6	1020	8.0
(C-7-67)27bdcb	TKdu	300	9-28-65	69	18	1.3	--	54	2.4	16	2.8	174	0	39	3.5	.6	.1	.10	223	144	1	19	0.6	352	8.2
SOUTH PLATTE VALLEY AREA																									
(B-1-65)30ccc	Qvf	70	7-16-65	54	19	0.01	--	96	41	131	2.9	330	0	237	121	2.1	15	0.25	836	410	139	41	2.8	1310	7.6
(B-1-66)6abd	Qvf	50	7-15-65	59	30	.57	--	132	33	154	4.3	326	0	300	134	1.3	38	.23	1020	465	198	42	3.1	1490	8.1
			9-16-65	57	18	.06	--	127	41	131	4.2	332	0	274	134	1.0	41	.17	960	484	212	37	2.6	1400	7.9
(B-1-67)14dda	Qvf	30	9-16-65	62	18	.04	--	107	55	146	3.8	460	0	291	92	1.7	14	.38	974	494	117	39	2.9	1440	7.9
36dcc	Qvf	26	7-15-65	58	18	.31	--	116	35	195	8.5	332	0	423	91	2.4	56	.29	1130	435	163	49	4.1	1610	7.5
(B-3-57)6bdd	Qal	175	7-15-65	62	21	.17	--	265	56	112	9.3	302	0	805	50	.7	21	.07	1530	890	642	21	1.6	1850	8.2
			9-22-65	59	26	.10	--	295	61	100	10	318	0	839	53	.9	19	.09	1600	985	724	18	1.4	1920	7.8
(B-3-66)18cba-3	Qvf	55	9-27-65	57	19	.03	--	129	40	125	4.5	326	0	329	105	1.4	16	.27	956	488	221	36	2.5	1400	8.0
(B-4-56)12aab	Qal	--	9-27-65	56	30	.17	--	295	92	182	18	336	0	1080	80	.8	20	.43	2050	1120	839	26	2.4	2420	7.7
33bbb	Qal	R90	7-15-65	55	19	.01	--	228	74	189	13	334	0	935	66	1.0	.7	.24	1780	875	601	32	2.8	2190	7.7
			9-22-65	55	19	.03	--	263	86	218	12	390	0	1010	75	1.4	1.9	.31	1960	1010	690	32	3.0	2360	7.5
(B-4-60)5ccd	Qvf	R75	9-27-65	55	18	.12	--	224	102	220	10	318	0	1070	68	1.8	15	.39	1960	980	719	33	3.1	2370	7.8
24ccc	Qal	225	9-22-65	56	21	.18	--	168	19	86	8.6	310	0	329	27	1.3	81	.05	904	497	243	27	1.7	1230	7.3
24dcc	Qal	243	7-15-65	56	20	.17	--	180	28	113	8.0	252	0	453	36	1.0	123	.03	1090	565	358	30	2.1	1450	7.5
(B-4-62)24bdd	Qal	110	7-16-65	56	18	.13	--	101	33	89	5.3	269	0	335	26	1.0	1.0	.12	743	388	167	33	2.0	1060	8.0
(B-4-63)4abb	Qvf	90	9-22-65	54	32	.06	--	246	72	202	6.3	362	0	933	82	.7	22	.28	1730	910	613	32	2.9	2180	7.9
(B-4-64)1dcc	Qvf	76	7-15-65	53	21	.02	--	244	90	265	5.8	271	0	986	198	1.2	6.8	.38	2010	980	756	37	3.7	2570	7.8
16abb	Qvf	39	9-22-65	54	20	.24	--	178	89	321	5.8	275	0	892	252	1.9	13	.34	1980	810	584	46	4.9	2660	7.6
(B-4-66)28adc	Qvf	98	9-16-65	55	15	.20	--	128	54	118	4.2	326	0	314	102	1.2	83	.12	1020	542	275	32	2.2	1470	7.6
30acc	Qvf	61	7-15-65	56	20	.17	--	130	28	133	5.1	286	0	292	98	.9	50	.11	916	440	205	39	2.8	1330	7.6
(B-4-67)11abd	Qal	35	9-28-65	54	16	.00	--	206	95	163	3.7	369	0	878	29	.8	23	.22	1720	905	602	28	2.4	2060	7.6
(B-5-54)2bdd	Qvf	80	9-22-65	62	20	.39	--	198	78	176	15	276	0	893	64	1.2	.5	.29	1630	815	589	31	2.7	2000	7.8
20ccd	Qal	90	7-15-65	54	35	.02	--	160	61	152	17	282	0	661	47	.7	10	.18	1310	650	419	33	2.6	1690	8.1
			9-22-65	54	33	.02	--	196	64	157	18	386	0	731	49	.7	6.2	.24	1450	755	438	31	2.5	1850	7.7
(B-5-64)21bbc	Qvf	67	9-16-65	57	20	.05	--	164	81	193	5.6	339	0	721	77	1.7	26	.23	1540	742	464	36	3.1	1920	7.6
(B-5-65)31dba	Qvf	63	9-16-65	63	17	.03	--	135	54	120	4.9	364	0	361	82	1.3	49	.17	1050	558	260	32	2.2	1470	7.9
(B-5-66)36abc	Qvf	25	9-16-65	64	16	.01	--	178	117	158	6.0	389	0	884	32	1.3	25	.34	1730	925	606	27	2.3	2080	7.8
(B-6-64)13dad	Qal		7-15-65	58	27	.22	--	214	61	180	17	335	0	796	58	.9	8.1	.27	1590	785	510	33	2.8	1980	7.8
		70	9-22-65	58	28	.06	--	206	64	170	17	334	0	803	60	.9	8.2	.25	1540	780	506	32	2.6	1950	7.9
(B-7-53)18bd	Qal	48	7-19-65	52	40	.12	--	156	46	130	17	312	0	533	51	.8	25	.19	1180	580	324	32	2.4	1540	7.9
(B-8-52)9bbb		69	9-23-65	55	49	.20	--	250	77	183	23	354	0	989	72	.9	13	.25	1820	940	650	29	2.6	2190	7.9
34abb	Qal,Qds	--	9-17-65	58	31	.08	--	163	34	111	8.5	278	0	505	39	.3	1.6	.29	1070	544	316	30	2.1	1390	7.8
(B-8-53)25bd	Qal	80	9-17-65	56	35	.25	--	187	52	116	14	294	0	616	58	.7	11	.17	1300	680	439	27	1.9	1630	7.5
(B-9-52)25ddd	Qal	79	7-16-65	52	21	.33	--	281	81	254	16	314	0	1200	78	.9	2.8	.28	2150	1040	778	34	3.4	2530	7.8
			9-23-65	53	18	.24	--	220	54	167	8.8	260	0	788	61	.6	.3	.21	1530	770	557	32	2.6	1920	7.7
(B-10-49)11bcd	Qal	55	9-17-65	54	35	.10	--	232	48	200	15	301	0	825	87	.8	6.0	.24	1680	776	529	35	3.1	2060	7.5
12db	Qal	42	9-23-65	54	17	.87	--	317	112	493	16	334	0	1830	131	1.4	4.3	.53	3100	1250	976	46	6.1	3690	8.0
(B-10-51)14dcd	Qvf	65	9-23-65	55	50	.08	--	285	45	118	18	266	0	840	74	.5	18	.20	1590	895	677	22	1.7	1920	7.7
(B-11-46)18db	Qal	67	9-23-65	54	55	.05	--	301	54	218	27	318	0	1070	92	.7	9.2	.30	2080	970	709	32	3.0	2490	7.5
19da	Qvf	21	9-23-65	58	51	.17	--	62	10	18	7.3	190	0	33	18	.6	26	.04	323	195	39	16	.6	474	7.5

See footnotes at end of table on page 127.

Concentrations of dissolved constituents, dissolved solids, and hardness given in parts per million

Well number	Geologic source 1/	Depth of well	Date of collection	Temperature (°F)	Silica (SiO_2)	Iron (Fe) 2/	Manganese (Mn) 2/	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH
																				Ca, Mg	Noncarbonate				
SOUTHERN TRIBUTARY AREA																									
(B-1-63)2bbb	Qal	--	9-22-65	56	26	0.06	--	355	80	160	6.5	340	0	1040	134	0.9	21	0.37	2080	1220	936	22	2.0	2450	7.6
(B-1-65)11aaa	Qvf	42	7-16-65	58	28	.01	--	222	46	229	6.5	452	0	619	176	.6	23	.36	1630	745	374	40	3.6	2250	7.7
			9-16-65	58	24	.03	--	300	50	275	6.6	559	0	777	209	.7	30	.35	2060	955	497	38	3.9	2660	7.9
(B-2-59)31dc-1	Qal	140	7-15-65	55	23	.32	--	160	26	94	8.5	266	0	441	24	1.0	3.6	.08	928	505	287	28	1.8	1230	7.6
(B-2-63)15ddc	Qvf	82	9-22-65	53	21	.10	--	577	124	457	9.1	412	0	2140	290	.6	22	.29	4060	1950	1610	34	4.5	4550	7.5
(B-2-65)24dcc	Qvf	70	9-16-65	62	22	.31	--	285	53	235	5.7	340	0	919	142	.8	11	.12	1920	926	647	35	3.4	2390	7.9
(B-3-56)27a	Qds	114	7-19-65	58	15	.15	--	26	7.5	8.6	3.1	115	0	18	2.2	.7	.1	.04	139	95	1	16	.4	224	7.8
			9-17-65	55	15	.17	--	27	6.3	8.8	3.7	94	0	35	3.7	.6	.2	.04	150	94	17	16	.4	222	7.1
(B-3-62)10ab	Qvf	60	9-22-65	54	19	.18	--	43	9.7	38	1.1	168	0	85	4.3	1.0	5.3	.06	296	148	10	36	1.4	463	7.0
(B-3-64)8cdd	Qvf	53	7-15-65	54	22	.35	--	301	44	248	6.3	336	0	1020	118	.7	16	.12	2020	930	654	37	3.5	2490	7.7
(C-1-55)7add	Qal	60	7-21-65	55	21	.12	--	253	84	98	9.0	300	0	887	35	.2	10	.18	1600	975	729	18	1.4	1890	8.2
(C-1-65)26dcdc	Qv	64	7-16-65	55	25	.15	--	85	14	37	5.3	219	0	115	29	.9	13	.04	437	268	88	23	1.0	668	7.4
(C-4-55)35dba	Qal	88	7-21-65	--	20	.14	--	66	13	13	3.1	192	0	55	8.1	.3	19	.12	315	219	62	11	.4	477	7.4
CACHE LA POUDRE AREA (BEDROCK)																									
(B-6-64)2dda	Kl(?)	295	5-26-65	60	9.0	.55	--	4.4	.2	224	.3	352	0	173	14	1.1	.7	.03	616	12	0	97	28	980	8.1
(B-6-65)3aad	Kl(?)	300	5-26-65	57	9.6	.15	--	4.4	1.0	217	.4	300	0	183	19	.8	.6	.07	595	15	0	97	24	945	8.0
30aad	Kl	280	9-16-65	60	7.3	.19	--	9.6	.0	293	1.4	258	0	379	43	1.0	2.2	.06	888	24	0	96	26	1330	8.1
(B-6-66)19dcb	Kfm	487	5-25-65	53	10	.42	--	7.2	1.2	339	.2	232	0	483	34	1.1	2.0	.12	980	23	0	97	31	1490	7.8
(B-7-66)7add	Kl	150	5-26-65	55	11	.77	--	65	33	38	5.3	238	0	176	5.4	1.2	.1	.00	462	297	102	21	1.0	711	7.9
(B-8-68)7ccd	Kprr(?)	669	5-25-65	66	11	.15	--	13	3.4	835	.4	189	6	1640	22	.3	2.6	.16	2530	47	0	97	53	3540	8.4
(B-8-69)12bdd	Kprr	206	5-25-65	53	8.9	.54	--	22	2.7	744	.5	192	0	1460	14	.4	2.9	.21	2320	65	0	96	40	3250	7.5
30acc	Kj (?)	44	5-25-65	52	11	.11	--	79	37	14	.4	254	0	72	27	.6	64	.01	439	349	141	8	.3	703	7.7
(B-9-68)8dcd	Kpl(?)	700	5-25-65	54	14	.50	--	55	44	355	2.9	153	0	880	6.0	.5	1.8	.17	1490	318	193	71	8.6	2030	7.9
CACHE LA POUDRE AREA (SURFICIAL DEPOSITS)																									
(B-5-65)2bbb	Qt	123	5-26-65	53	33	.41	--	210	60	125	9.3	210	0	794	38	.3	48	.19	1450	770	598	26	2.0	1780	8.2
(B-6-64)24daa	Qal	37	5-26-65	51	38	.21	--	224	92	391	16	303	0	1380	81	1.0	38	.46	2460	940	692	47	5.5	3060	7.6
31ccd	Qt(?)	100	5-27-65	55	27	.12	--	200	63	132	9.0	286	0	715	30	.7	29	.18	1350	760	525	27	2.1	1710	7.7
32dab	Qt	43	5-27 65	52	22	.08	--	265	156	228	8.2	348	0	1290	66	1.9	54	.46	2330	1300	1010	27	2.8	2660	8.0
35baa	Qal	42	5-26-65	48	32	.50	--	277	370	1000	16	496	0	3680	155	2.2	5.6	.76	6280	2210	1800	49	9.3	6540	7.6
(B-6-64)35ddb	Qal	41	5-26-65	55	35	.58	--	417	111	646	25	310	0	2480	140	.8	16	.53	4110	1500	1240	48	7.3	4730	7.7
(B-6-65)4baa-1	Qal	42	6- 2-65	53	31	.04	--	289	80	170	10	404	0	908	40	1.1	74	2.1	1830	1050	719	26	2.3	2210	7.9
22cbb	Qt	64	5-28-65	50	33	.30	--	307	67	150	10	356	0	942	38	.5	31	.20	1740	1040	748	24	2.0	2100	7.8
35bbb	Qt	57	5-26-65	54	33	.47	--	177	63	108	5.8	226	0	684	30	.9	33	.18	1350	703	518	25	1.8	1660	7.7
(B-6-66)2aaa	Qal(?)	31	7-16-65	52	20	.14	--	371	290	263	4.2	437	0	2210	34	1.7	28	.81	3720	2120	1760	21	2.5	3710	7.8

(B-6-66)19dbc	Qt	29	7-16-65	58	15	0.03	--	195	203	192	1.5	406	0	1290	45	2.8	28	.24	2350	1320	987	24	2.3	2610	7.8
28daa	Qt	44	7-16-65	53	18	.03	--	135	118	114	1.8	377	0	686	25	1.8	28	.20	1420	824	515	23	1.7	1710	7.5
29abb	Qt	36	5-28-65	53	16	.02	--	216	272	189	2.1	440	0	1530	54	2.1	20	.09	2650	1660	1300	20	2.0	3030	7.9
36acc	Qal	39	5-27-65	49	10	.13	--	232	108	168	4.1	396	0	958	34	.8	.9	.31	1780	1020	700	26	2.3	2120	8.0
(B-6-67)1bbc	Qal	51	5-27-65	53	15	.16	--	90	95	91	1.6	419	0	398	17	2.2	20	.11	950	616	272	24	1.6	1340	7.9
(B-6-67)7cbd	Qt	29	5-25-65	55	17	.20	--	184	66	69	3.4	368	0	515	18	.9	29	.16	1100	730	428	17	1.1	1430	7.8
26aba	Qt	33	5-26-65	51	20	.06	--	269	180	200	5.2	432	0	1330	41	.9	20	.35	2390	1410	1060	23	2.3	2680	7.9
(B-7-65)15bba	Qal	29	5-28-65	51	30	.08	--	210	46	103	10	369	0	532	28	.5	51	.13	1200	715	412	24	1.7	1570	7.6
(B-7-66)1bbb-2	Qal	27	5-26-65	52	23	.05	--	136	30	49	5.0	296	0	240	28	.5	36	.11	694	464	221	18	1.0	1000	7.6
(B-7-66)3aad	Qal	42	5-27-65	55	21	.11	--	147	35	60	4.9	373	0	279	22	.7	13	.11	781	510	204	20	1.2	1120	7.6
36cbb	Qal	49	5-28-65	53	22	.10	--	257	173	163	3.6	404	0	1240	24	.8	20	.47	2170	1350	1020	21	1.9	2460	8.0
(B-7-68)5dbc	Qal	75	5-27-65	52	12	.18	--	309	136	155	3.6	271	0	1360	26	.9	13	.34	2290	1330	1110	20	1.8	2490	7.7
20bcc	Qp(?)	25	5-25-65	53	17	.10	--	91	40	27	1.0	424	0	67	4.8	1.3	7.2	.08	448	392	44	13	.6	747	7.9
35abc	Qal(?)	35	9-27-65	53	14	.02	--	244	105	132	4.2	354	0	984	26	.7	12	.20	1830	1040	750	22	1.8	2110	7.8
(B-7-69)24daa	Qp	31	5-25-65	54	15	.11	--	100	29	51	1.4	407	0	101	8.0	.7	16	.16	507	370	36	23	1.2	784	7.9
(B-8-65)29bbb	Qal	22	5-27-65	50	29	.11	--	168	48	96	6.7	390	0	435	18	.8	28	.18	1040	618	298	25	1.7	1370	7.8
(B-8-66)22aab	Qal	38	7-16-65	53	22	.09	--	75	14	31	4.8	250	0	50	21	.4	40	.12	389	244	39	21	.9	599	7.6
(B-8-68)15bcb	Qal	52	5-27-65	53	19	.11	--	319	100	102	3.5	308	0	1080	20	1.3	23	.34	1880	1200	952	16	1.3	2150	7.9
28bbb-2	Qal	54	5-27-65	53	18	.22	--	433	143	154	4.2	296	0	1640	29	1.1	21	.50	2670	1670	1430	17	1.6	2920	7.9
(B-8-68)32aba-1	Qal	90	5-27-65	53	18	.18	--	485	190	212	4.2	334	0	1990	35	1.1	13	.63	3290	1990	1720	19	2.1	3410	8.0
33dab-1	Qal	25	5-27-65	50	18	.28	--	393	151	139	3.7	336	0	1470	28	1.2	31	.43	2490	1600	1320	16	1.5	2690	7.9
(B-8-69)27dbb	Qal	38	5-28-54	52	12	A.04	--	99	47	18	1.2	305	0	205	2.6	.8	5.6	.08	537	438	188	8	.4	814	7.8
(B-9-66)33cac	Qal	40	5-26-65	54	23	.15	--	102	14	24	4.8	200	0	58	12	.4	144	.03	512	310	146	14	.6	704	7.8
(B-9-68)8cab	Qal	80	7-22-65	53	18	.31	--	285	88	76	4.3	289	0	956	14	1.0	8.2	.20	1650	1070	833	13	1.0	1920	7.5
(B-9-68)19bbb	Qp	41	7-22-65	51	14	.18	--	97	39	61	1.3	312	4	254	8.1	1.1	11	.19	657	404	142	25	1.3	945	8.3
26bcc	Qal	43	5-25-65	51	14	.29	--	170	199	377	6.5	356	0	1660	33	1.2	43	.36	2910	1240	953	40	4.6	3280	7.9
33cab-2	Qal	90	5-25-65	53	18	.15	--	345	95	83	4.6	280	0	1170	19	1.1	25	.24	1920	1250	1020	13	1.0	2120	7.9
(B-9-69)14ada-1	Qp	22	5-25-65	48	14	.12	--	59	34	63	.5	284	0	162	10	1.1	16	.14	503	286	53	32	1.6	805	7.9
NORTHERN TRIBUTARY AREA																									
(B-8-55)33ddd	Kp	590	7-16-65	67	9.9	.02	--	8.0	.2	394	4.1	595	17	40	240	2.0	1.0	1.5	1040	21	0	97	37	1690	8.5
(B-8-62)29aba	Qvf	23	1-23-53	48	39	A.64	--	180	42	206	12	477	0	605	55	.9	.7	.2	B1380	620	229	41	3.6	1860	7.6
			7-22-65	52	37	.02	--	186	46	222	13	361	0	718	86	.9	.3	.16	1540	655	359	42	3.8	2060	7.8
(B-9-60)34adc	Tw	100	8-21-53	--	17	--	--	94	17	163	9.4	218	0	448	12	.1	.1	.2	B 868	306	127	53	4.1	1280	7.2
			5- 8-63	56	--	--	--	--	--	158	--	232	0	437	13	--	--	--	--	296	106	54	4.0	1240	7.4
			7-22-65	57	18	.19	--	90	15	172	8.5	216	0	439	14	.3	.1	.11	864	285	108	56	4.4	1220	8.0
(B-11-51)6ba-1	To	240	7-16-65	63	44	.04	--	60	18	18	8.7	182	0	46	37	.7	29	.13	369	223	74	14	.5	540	7.7
(B-11-62)35bca	Qu	60	1-26-53	51	37	A.14	--	69	12	33	6.8	250	0	51	20	1.0	19	.1	B 372	221	15	24	1.0	571	7.8
			7-22-65	50	39	.17	--	81	14	47	8.5	312	0	68	22	1.4	15	.00	454	262	6	27	1.3	712	7.9
(B-12-62)34abb	Qvf	60	7-22-65	52	44	.10	--	51	8.5	12	5.5	189	0	19	8.6	1.0	11	.09	261	161	6	13	.4	377	8.0

See footnotes at end of table on page 127.

CHEMICAL ANALYSES OF GROUND WATER IN COLORADO--Continued

Concentrations of dissolved constituents, dissolved solids, and hardness given in parts per million

Well number	Geologic source 1/	Depth of well	Date of collection	Temperature (°F)	Silica (SiO_2)	Iron (Fe) 2/	Manganese (Mn) 2/	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180°C)	Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH
																				Ca, Mg	Noncarbonate				
PART 7. LOWER MISSISSIPPI RIVER BASIN																									
KANSAS RIVER BASIN																									
HIGH PLAINS AREA																									
(B-2-44)36bbb-2	To	180	1-12-57	58	68	A0.03	0.00	35	11	17	8.2	186	0	13	6.0	0.9	5.6	--	244	133	0	21	0.6	337	7.6
36bbb-1,2	To	182	7-19-65	60	52	.16	--	36	11	15	7.8	184	0	14	2.2	.9	3.4	0.06	248	136	0	18	.6	337	8.1
(B-2-48)25cdb	To	361	7-21-65	60	50	.22	--	38	9.7	13	7.3	178	0	12	3.5	.9	4.2	.05	239	134	0	16	.5	329	8.2
(B-2-50)9ddd	To	218	5-23-58	58	56	.04	.00	35	11	9.6	7.8	163	0	13	4.0	.7	8.0	--	252	133	0	13	.4	306	7.9
			7-21-65	60	46	.12	--	36	10	8.5	7.2	164	0	12	3.5	.7	7.1	.06	223	133	0	12	.3	317	7.7
(B-5-43)24abb	To	260	7-19-65	58	50	.00	--	39	11	8.8	7.4	176	0	21	1.9	.7	3.3	.04	241	144	0	11	.3	329	7.5
(B-7-43)27bbb	To	215	9- 3-52	56	--	--	--	--	--	12	6.5	--	--	--	--	--	--	--	--	133	--	16		324	--
			7-19-65	57	41	.11	--	38	9.7	11	6.0	169	0	14	4.2	.9	3.6	.06	220	136	0	14	.4	315	8.2
(B-10-43)3dcd	To	400	9- 9-52	59	--	--	--	--	--	19	7.6	--	--	--	--	--	--	--	--	145	--	21	--	368	--
			7-19-65	60	39	.17	--	39	11	15	7.4	191	0	13	4.2	.6	6.7	.06	234	144	0	18	.5	350	8.2
(C-1-44)27bbb	To	263	8-22-57	58	--	--	--	37	15	16	9.0	210	0	11	4.5	1.5	5.8	--	B 203	154	0			368	7.7
			7-19-65	--	47	.09	--	38	16	15	8.4	205	0	19	4.0	1.6	8.2	.14	252	159	0	16	.5	378	8.1
(C-2-43)22adb	Qal	57	10- 1-56	55	--	--	--	66	18	47		336	0	47	10.5	1.8	.0	--	B 358	238	0			627	7.4
			7-19-65	58	48	.08	--	71	23	51	11	329	0	94	18	2.0	.1	.00	482	272	2	28	1.4	737	8.0
(C-4-46)31cad	To	286	7-19-65	58	44	.06	--	34	10	13	4.3	163	0	16	4.1	1.0	6.7	.05	213	127	0	18	.5	310	8.2
(C-5-51)23cbd	Qal,To	51	7-21-65	--	41	.04	--	55	10	12	4.1	204	0	24	4.8	.5	17	.10	269	179	12	12	.4	394	7.7
(C-5½-44)36acd	To	125	9- 2-55	57	--	--	--	--	--	--	--	--	--	--	6.0	--	--	--	--	--	--	--	--	347	--
			7-20-65	57	29	.11	--	35	9.2	21	3.7	183	0	8.8	3.0	1.3	7.3	.05	210	125	0	26	.8	330	8.0
(C-6-50)30bdd	To	206	11- 9-54	57	44	A.03	--	35	9.5	9.0	4.4	162	0	11	3.5	.6	4.8	.16	200	126	0	13	.4	288	8.0
			7-21-65	57	36	.19	--	37	8.5	8.4	2.9	158	0	11	2.6	.6	5.7	.03	190	127	0	12	.3	278	7.9
(C-8-43)32ccb	To	321	11- 3-54	60	36	A.15	.06	30	10	22	4.8	181	0	10	3.0	1.8	7.6	.02	214	116	0	28	1.0	325	8.0
			7-20-65	--	29	.16	--	31	9.5	24	3.5	178	0	12	2.6	1.7	5.3	.09	209	116	0	30	1.0	324	8.1
(C-9-51)2acc	To	103	10-18-55	57	48	A.00	.00	34	12	30	4.4	200	0	17	6.0	.9	12	.14	263	134	0	32	1.2	383	7.9
			7-21-65	57	40	.28	--	36	13	39	2.9	210	0	30	10	1.3	13	.16	284	146	0	36	1.4	431	8.0
(C-11-44)21abb	To	180	7-20-65	57	21	.02	--	40	8.8	9.6	2.7	160	0	14	5.1	.4	11	.07	184	136	5	13	.4	300	8.0
(C-12-47)10aad	To	183	7-20-65	58	24	.07	--	44	11	18	2.8	196	0	21	7.7	.5	7.9	.12	233	157	0	20	.6	380	7.9
(C-13-44)21aac	To	182	8-29-60	59	15	A.00	--	35	6.6	18	2.8	154	0	20	3.0	.5	8.6	--	B 186	115	0	25	.7	298	8.1
			7-20-65	60	19	.03	--	38	7.5	18	2.6	147	0	24	7.5	.6	8.7	.06	207	125	4	23	.7	331	7.5

ARKANSAS RIVER BASIN

NORTHERN TRIBUTARY AREA

(C-11-55)2bba	Qvf	32	7-20-65	55	16	.06	--	56	19	150	3.6	324	0	231	26	.2	13	.23	661	220	0	59	4.4	1030	8.1
(C-13-52)7bcd	Qvf	37	7-20-65	55	14	.58	--	126	30	208	6.0	276	0	645	25	.6	1.3	.17	1200	440	214	50	4.3	1610	8.2
(C-18-46)8cbc	Qvf	46	6- 6-61	57	--	--	--	212	89	313	8.9	292	0	1180	87	1.0	28	--	B2060	896	657	43	4.6	2660	7.6
8cca	Qvf	48	7-20-65	57	20	.10	--	242	112	385	8.1	284	0	1360	166	1.2	43	.23	2500	1070	832	44	5.1	3130	8.1
(C-20-42)36cdc	To	187	5-16-61	59	--	A.00	--	76	33	81	3.5	194	0	287	32	1.6	8.3	.30	B 618	326	167	35	2.0	930	8.1
			7-20-65	60	24	.18	--	73	39	84	4.0	188	0	312	38	2.0	8.3	.29	685	344	190	34	2.0	986	8.2

1/ Qal, alluvial deposits; Qu, unconsolidated deposits; Qds, dune sand; Qvf, valley fill deposits; Qt, terrace deposits; Qpd, pediment deposits; Qv, Verdos Alluvium; Ql, Louviers Alluvium; Qb, Broadway Alluvium; Qp, Piney Creek Alluvium; Qpp, post-Piney Creek Alluvium; To, Ogallala Formation; Tw, White River Group; Kj, Jelm Formation; Kp, Pierre Shale; Kprr, Rocky Ridge Sandstone Member of the Pierre Shale; Kpl, Larimer Sandstone Member of the Pierre Shale; Kfh, Fox Hills Sandstone; Kl, Laramie Formation; Kfm, Milliken Sandstone Member of the Fox Hills Sandstone; Kla, A sandstone of the Laramie Formation; Klb, B sandstone of the Laramie Formation; Kdlc, lower conglomerate of the Dawson Formation; Klmc, middle conglomerate of the Dawson Formation; TKdu, upper part of the Dawson Formation.

2/ In solution at time of sampling, unless otherwise indicated.

A In solution at time of analysis.

B Calculated from determined constituents.

R Reported.

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